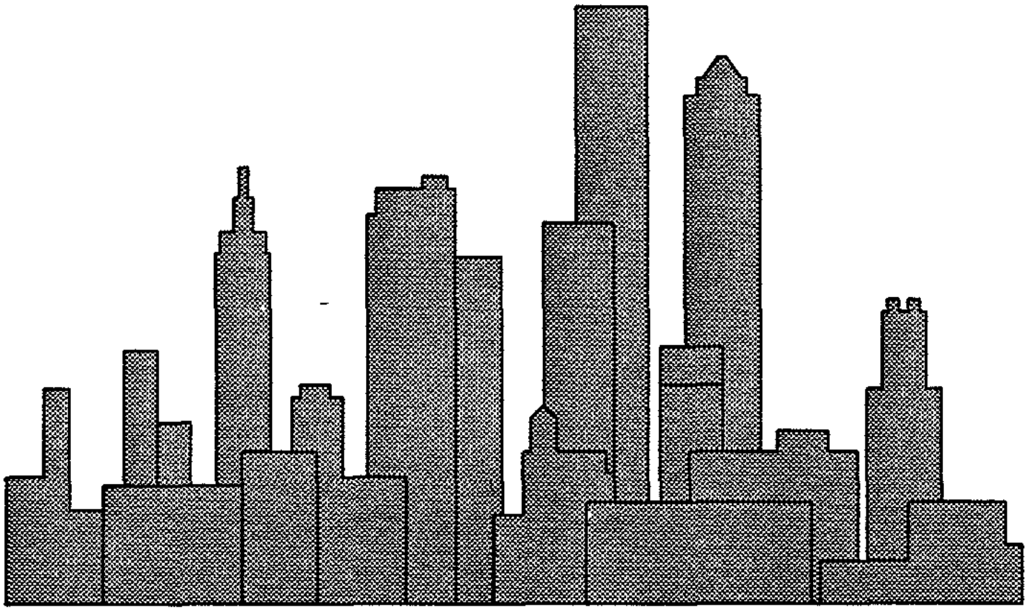
Urban Water Management Plan



March 1996

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SANTA CLARA VALLEY WATER DISTRICT

URBAN WATER MANAGEMENT PLAN

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MARCH 1996

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I. Introduction

A. The Urban Water Management Planning Act

This Urban Water Management Plan (Plan) has been prepared in response to the Urban Water Management Planning Act (Act), Water Code Division 6, Part 2.6, Sections 10610 through 10656. The Act was adopted by the State Legislature, approved by the Governor and became effective on January 1, 1984. The Act, originally AB 797, had a termination date of January 1, 1991. Subsequent legislation, AB 2661, effective July 19, 1990, deleted this termination date and imposed a state mandated local program indefinitely.

Further amendments to the legislation were made in the following years. Effective in 1991, AB 11X requires the addition of the Urban Water Shortage Contingency Plan to the legislation. Also in 1991, AB 1869 increased the reclamation elements to be included in the Plan. AB 892, effective in 1993, states that members of the California Urban Water Conservation Council (CUWCC) can submit their annual reports in order to identify the conservation measures required by the Plan. This amendment also requires that methods for involving community members in the decision making process be identified in the Plan. Due to SB 1017, effective in 1994, urban water suppliers are able to recover, in their rates, the cost of preparing the Plan and the conservation measures it requires. The most recent amendment to the Plan was in 1994. AB 2853 changed the word "reclaimed" to "recycled" throughout the Plan and requires it to be coordinated with local water agencies, planning agencies, and wastewater agencies. This change in the Plan requires that information on recycled water and its potential use as a water source be identified in the document. Modifications to this statute are still occurring.

There are two more amendments, SB 1011 and AB 1845, that will affect all Urban Water Management Plans beginning in January 1996. SB 1011 requires that the plan be updated every five years and be turned in on or before December of the years ending in 5 and 0. This bill also requires that each urban water supplier "take appropriate actions to ensure the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the Plan". If SB 1011 passes, DWR must submit a report, to the legislature in the years ending in 1 and 6, summarizing the status of the plans submitted. AB 1845 would require every urban water supplier to include, as part of its urban water management plan, a prescribed resource assessment of the reliability of its water service to its various categories of customers during normal, dry and critically dry water runoff years.

The Act requires that "every urban water supplier shall prepare and adopt an Urban Water Management Plan," where urban water supplier is defined as "a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually." The legislation is listed in Appendix A.

As stated above, the Plan must be submitted to DWR at least once every five years. The District prepared an initial Plan in 1985 and a revision in 1990 for both District and regional water supply planning purposes. This Plan represents a revision of the earlier Plans.

The District's Urban Water Management Plan includes an overview of District facilities and operations, as well as a description of local water conservation, recycling, and management activities. The District currently conducts its water conservation activities in cooperation with its retailers. This report does not, however, include a description of retailer conservation activities, since each retailer will prepare a similar Plan.

B. Organization of the 1995 Urban Water Management Plan

The chapters corresponding with the specific provisions of the Act are noted below:

Chapter I - Introduction: the Act, Plan review process, implementation schedule (10631d, h, m)

Chapter II - Information on the SCVWD: service area description, management goal, facilities management (10631m, 10632a)

Chapter III - Water Use: past, current, and projected water use and recycled water use (10631a, 10631e ,10632a)

Chapter IV - Water Supplies: local and imported water supplies, transfers, supply monitoring systems (10632a, 10633)

Chapter V - Water Supply Deficiencies: long and short term deficiencies, ability to meet deficiencies (10631f, 10633).

Chapter VI - Urban Water Shortage Contingency Plan: (10631e)

Chapter VII - Water Recycling: nonpotable and potable recycled water projects (10631b, 10632a, 10633)

Chapter VIII- Water Conservation: CUWCC annual report (10631b, c, i, j, k, l, 10632a , 10633)

C. Plan Development and Review Process

The District's Urban Water Management Plan was prepared by District staff. District staff have worked closely with retail water agencies, advisory committees, and others to develop and implement water conservation and water management programs. A list of Contact Persons, for questions concerning this report, is included in Appendix B.

A draft of the Plan was made available for public review in the office of the District's Clerk of the Board and at the Willow Glen Library. A public hearing was conducted on March 5, 1996 and the Board passed a resolution recommending that the Plan be adopted, with minor revisions. Appendix G contains the public comments and District responses. The Plan was filed with the Department of Water Resources on March 29, 1996.

This process complies with Sections 10641(a), 10642, and 10644 of the Urban Water Management Planning Act.

D. Schedule of Implementation for Actions Described in the Plan

The actions described in the Plan can be categorized into three general areas:

Water Conservation

Chapter VIII summarizes the District's current and planned water conservation programs. Currently all Best Management Practices (BMPs) are being implemented. Potential additional programs will be evaluated as they arise.

Water Recycling

Recognizing the importance water recycling will play in helping to meet the County's long-term water demands, the following eight point Water Recycling Action Plan was adopted in September 1994. This Plan outlines the activities staff has undertaken to encourage the use of recycled water. The following is a list of action plan elements and a brief status report of each to date:

- Continue and increase coordination, cooperation, and communication with the city of San Jose in the Phase I Nonpotable Water Recycling Project, within the framework of the District's Nonpotable Water Recycling Policy.

- Conclude agreements with the cities of Santa Clara and Sunnyvale for District financial participation.

- Continue coordination with Gilroy-Morgan Hill on their Regional Wastewater Recycling Program.

- Continue staff participation on the Central California Regional Water Recycling Project.

- Coordinate with federal agencies to secure federal funding.
- Continue coordination with the county water retailers.
- Continue and increase staff and Board participation in WateReuse Association activities and committees.

Integrated Water Resources Plan

The District has begun the process of developing an Integrated Water Resources Plan to guide the District in meeting its water supply needs to the year 2020. This effort will culminate in the completion of a project report which will document the current and future needs of the county; the adequacy of existing sources of supply and facilities; and develop a community supported resource strategy for meeting the water needs of the county. This work will address supply-side options (water transfers, recycling, and storage) and demand-side management options. Through an open and participatory process, a plan will be developed that will balance the many competing objectives such as supply reliability, cost, water quality, and the environment while recognizing the many uncertainties inherent in planning. The resulting strategy will include short term implementation actions, a long-range plan, and contingency plans.

The development, refinement, and implementation of the IWRP will occur in multiple phases over several years. Phase I of the District's IWRP process is scheduled to take place over the next year. The objective of Phase I is to select a preferred resource strategy for the long term and to develop an action plan for the near term (first two to three years). The process is illustrated in Figure 1. The preliminary schedule, developed in early 1995, is shown in Figure 2.

Figure 1

Integrated Water Resources Planning Process

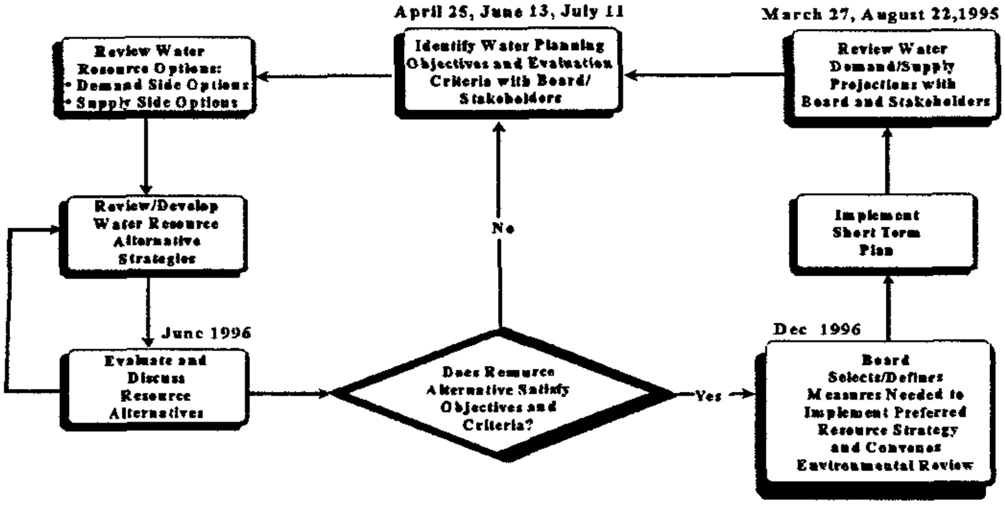
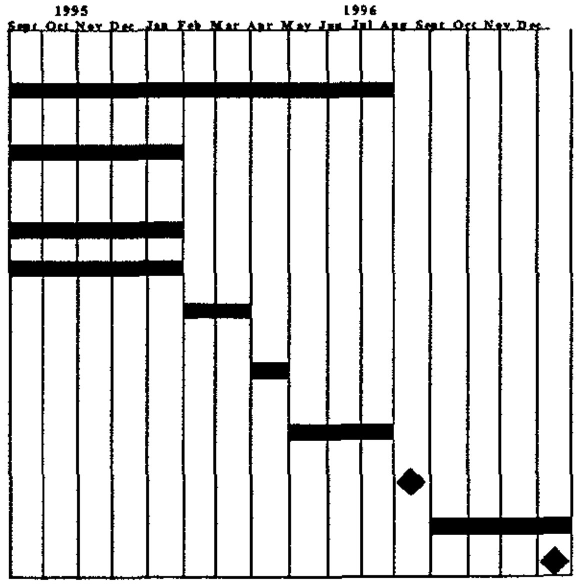

April 25, June 13, July 11
March 27, August 22,1995
Review Water Resource Options:
• Demand Side Options
• Supply Side Options
Identify Water Planning Objectives and Evaluation Criteria with Board/ Stakeholders
Review Water Demand/Supply Projections with Board and Stakeholders
Review/Develop Water Resource Alternative Strategies
No
Implement Short Term Plan
June 1996
Dec 1996
Evaluate and Discuss Resource Alternatives
Does Resource Alternative Satisfy Objectives and Criteria?
Yes
Board Selects/Defines Measures Needed to Implement Preferred Resource Strategy and Convenes Environmental Review

Figure 2

Integrated Water Resources Plan
Preliminary Schedule

Task	Status/Completion Date
1. Define Planning Objectives	Completed
2. Identify & Involve Stakeholders	Stakeholders Identified
3. Develop Evaluation Methodology	Ongoing
4. Review Demand Projections	Completed
5. Assessment of Supply-side Options	Feb 1996
6. Assessment of Demand Side Options	Feb 1996
7. Formulation of Alternative Resource Strategies	Apr 1996
8. Analysis of Evaluation of Resource Strategies	May 1996
9. Selection of Draft Preferred Resource Strategy (Draft IWRP)	June 1996
10. Board Approval of Final IWRP	Aug 1996
11. Develop Implementation Plan	Dec 1996
12. Board Approval of Implementation Plan	Dec 1996



II. General District Information

A. Agency Formation and Purpose

The Santa Clara Valley Water District is a special district responsible for water resource management in Santa Clara County, the southernmost county bordering the San Francisco Bay. The District encompasses all of the county's 1,300 square miles and serves the area's 1.6 million residents. Its water resource management responsibilities include providing wholesale water supply; monitoring and protecting the quality of water sources; operating and maintaining a water treatment system; managing flood and storm water for public safety and protection of property; and mitigating the impacts of District projects.

The District traces its origins to the Santa Clara Valley Water Conservation District, an agency formed in 1929 in the northern portion of the county and charged with responsibility for constructing water supply reservoirs. Other water conservation districts eventually formed elsewhere in the county and later consolidated with the original district.

A seven-member Board of Directors governs the District. Five directors are elected from Santa Clara County supervisorial districts; two are appointed by county supervisors. The board sets policy and provides direction to District management and staff.

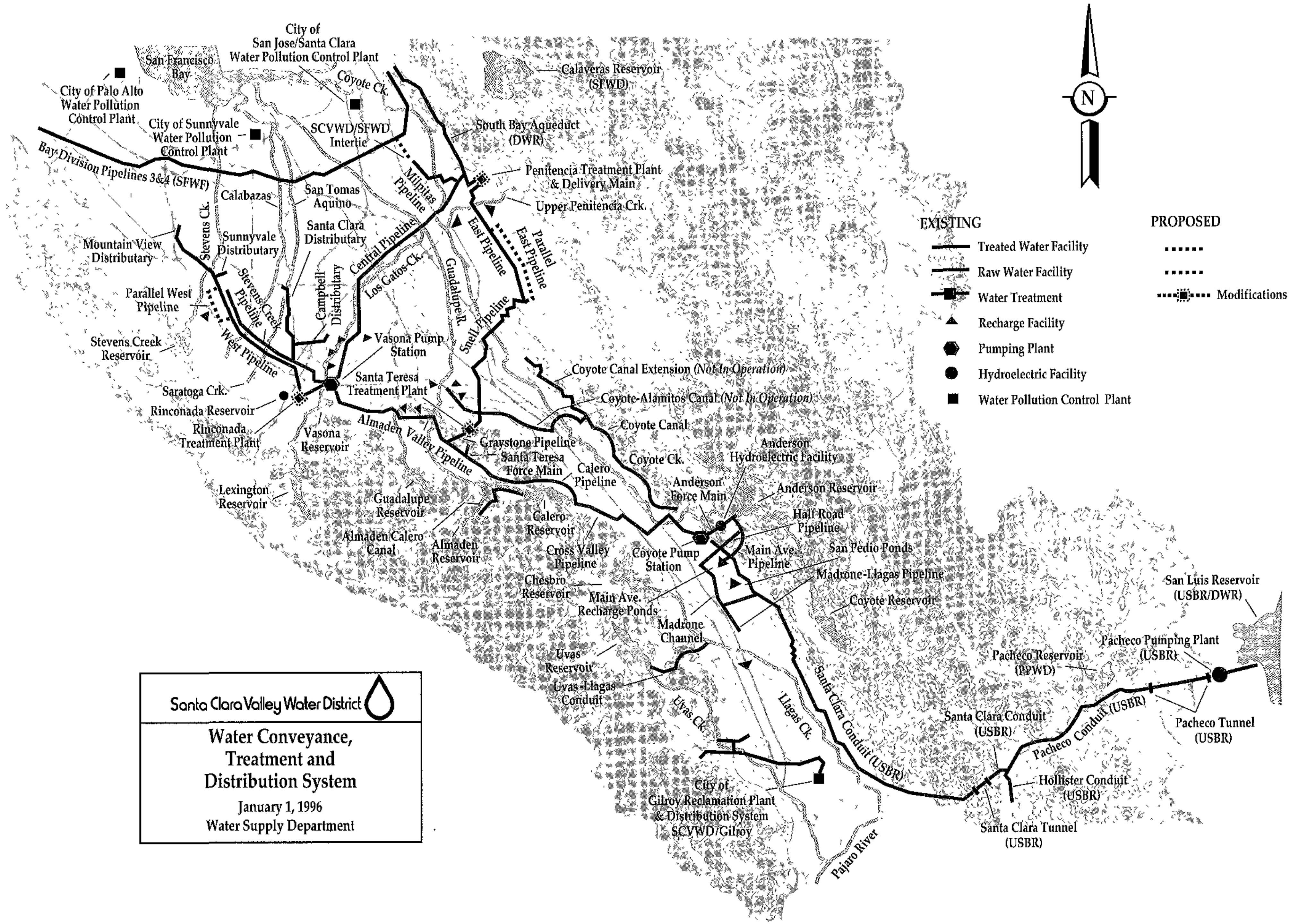
The District conserves, imports, treats and recharges water in order to provide a wholesale water supply to its retail water agencies. The District's facilities to store, treat and distribute water are shown in Figure 3.

The District began a reorganization process in 1995 that resulted in the establishment of seven major functional groups: Office of the General Manager, Management Improvement, Clerk of the Board, Administration and Financial services, Water Resource Management, Project Support Services and Operations and Maintenance. Management and staff currently includes 596 employees. In fiscal year 1993-1994, District revenues totaled $138 million in property taxes, flood control benefit assessments, water charges, interest earnings, grants, and other sources.

Santa Clara Valley Water District

Water Conveyance, Treatment and Distribution System

January 1, 1996
Water Supply Department



B. Service Area Description

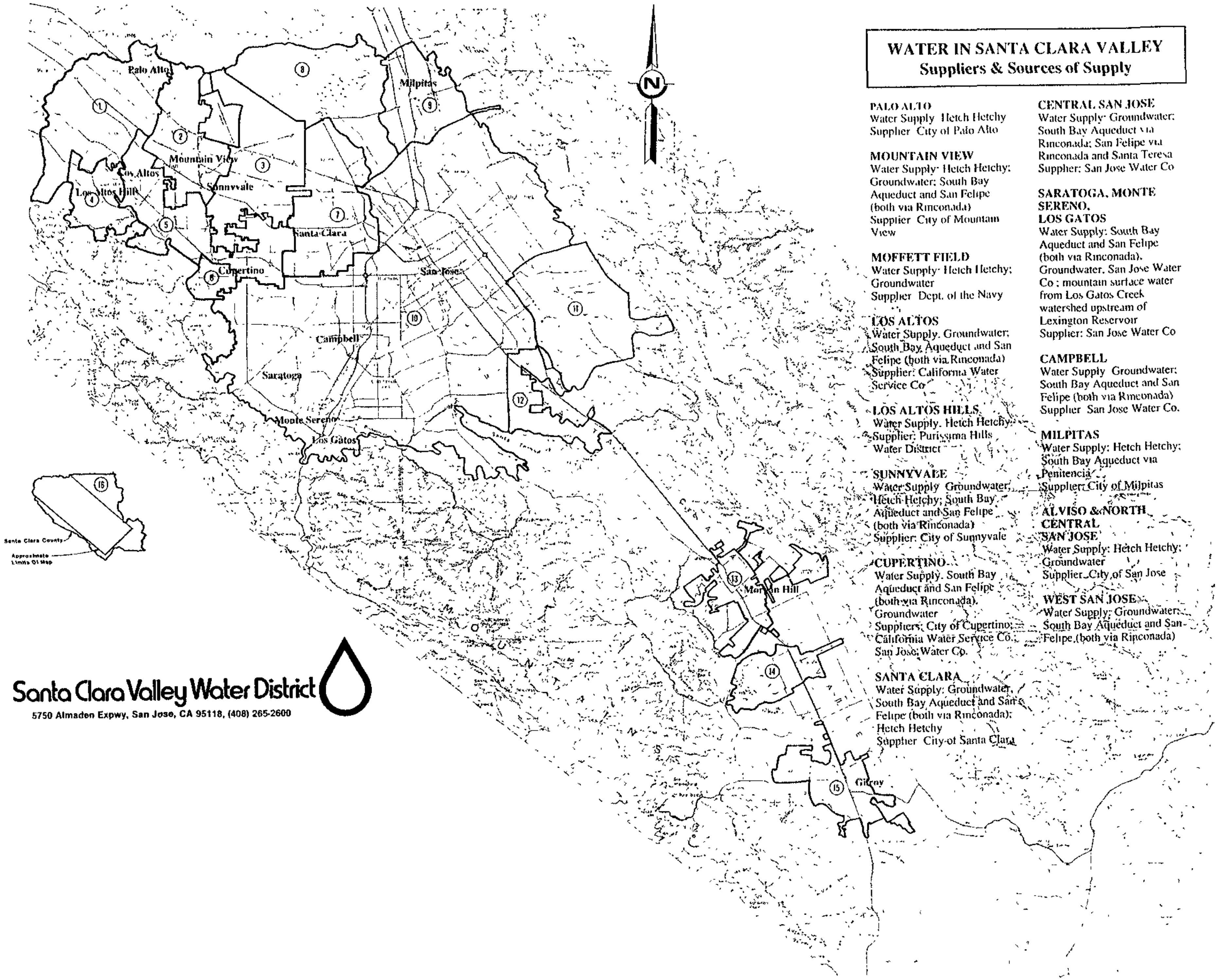
The District has the same boundaries as Santa Clara County and covers about 1300 square miles, including the Santa Clara Valley from San Francisco Bay south to the Pajaro River, and portions of the Diablo Range and Santa Cruz Mountains. Most of the development and water use occurs on the 350 square mile valley floor. Major streams in the District include the Pajaro River, Guadalupe River, Coyote Creek, Llagas Creek, Uvas Creek, and Los Gatos Creek. The Valley's climate is characterized by warm, dry summers and mild, wet winters. Average annual precipitation ranges from 14 inches on the valley floor to 45 inches along the crest of the Santa Cruz Mountains.

The service areas of the District's retail water agencies and their sources of supply are shown in Figure 4. The 1994 water use of each retailer is shown in Table 1, which represents the major M&I deliveries of the county. This Table does not capture individual well pumping or agricultural users.

The population of the District has increased from 605,000 in 1960 to 1,575,700 in 1993. The assessed valuation has grown from $1.0 billion in 1960 to about $112 billion in 1995.

Table 1. 1994 Water Use by Major Retailer

Major Retailer	Water Use, in Acre-feet
California Water Co.	12,784
City of Cupertino	2,928
Great Oaks Water Co.	10,959
City of Milpitas	10,948
City of Mountain View	12,209
City of Palo Alto	13,283
Purissima Hills County Water District	1,813
City of San José	15,328
San José Water Company	136,348
City of Santa Clara	25,744
City of Sunnyvale	23,705
City of Gilroy	5,828
City of Morgan Hill	5,402
Total	277,279



WATER IN SANTA CLARA VALLEY
Suppliers & Sources of Supply

PALO ALTO
Water Supply Hetch Hetchy
Supplier City of Palo Alto

MOUNTAIN VIEW
Water Supply: Hetch Hetchy; Groundwater; South Bay Aqueduct and San Felipe (both via Rinconada)
Supplier City of Mountain View

MOFFETT FIELD
Water Supply: Hetch Hetchy; Groundwater
Supplier Dept. of the Navy

LOS ALTOS
Water Supply. Groundwater; South Bay Aqueduct and San Felipe (both via Rinconada)
Supplier: California Water Service Co

LOS ALTOS HILLS
Water Supply. Hetch Hetchy
Supplier: Purissima Hills Water District

SUNNYVALE
Water Supply Groundwater; Hetch Hetchy; South Bay Aqueduct and San Felipe (both via Rinconada)
Supplier: City of Sunnyvale

CUPERTINO
Water Supply. South Bay Aqueduct and San Felipe (both via Rinconada). Groundwater
Suppliers; City of Cupertino; California Water Service Co.; San Jose Water Co.

SANTA CLARA
Water Supply: Groundwater, South Bay Aqueduct and San Felipe (both via Rinconada); Hetch Hetchy
Supplier City of Santa Clara

CENTRAL SAN JOSE
Water Supply: Groundwater; South Bay Aqueduct via Rinconada; San Felipe via Rinconada and Santa Teresa
Supplier: San Jose Water Co

SARATOGA, MONTE SERENO, LOS GATOS
Water Supply: South Bay Aqueduct and San Felipe (both via Rinconada). Groundwater. San Jose Water Co ; mountain surface water from Los Gatos Creek watershed upstream of Lexington Reservoir
Supplier: San Jose Water Co

CAMPBELL
Water Supply Groundwater; South Bay Aqueduct and San Felipe (both via Rinconada)
Supplier San Jose Water Co.

MILPITAS
Water Supply: Hetch Hetchy; South Bay Aqueduct via Penitencia
Supplier: City of Milpitas

ALVISO & NORTH CENTRAL SAN JOSE
Water Supply: Hetch Hetchy; Groundwater
Supplier City of San Jose

WEST SAN JOSE
Water Supply: Groundwater; South Bay Aqueduct and San Felipe (both via Rinconada)

Santa Clara Valley Water District
5750 Almaden Expwy, San Jose, CA 95118, (408) 265-2600

C. District's Mission and Goals

The mission of the District is to conduct a sound water management program that serves the community. This mission can be fulfilled through the accomplishment of these goals:

- Provide a supply of water, adequate as to both quantity and quality, needed to meet the desired quality of life in the community.
- Provide protection against flooding in a manner that maintains the desired quality of life in the community.
- Coordinate all other community water-related programs to achieve full water management.
- Consider the community desires in all District programs and projects.
- Protect the environment in the formulation and execution of District programs and projects.
- Protect the economic well-being of the community in the formulation and execution of District programs and projects.
- Fully implement water conservation Best Management Practices (BMPs).
- Make full use of economically feasible local water supplies, including recycled water.

Many of these goals are the subject of this Urban Water Management Plan. The legislation mandates that specific water supply planning analyses be done, and specific alternatives be addressed. These mandated analyses and alternatives are organized and discussed in the context of the District's overall water supply management program.

D. Water Utility Operation and Maintenance

1. Water Utility Facilities

The District currently operates and maintains ten water conservation reservoirs, three water treatment plants, one hydroelectric facility, three pumping plants, 417 acres of groundwater recharge facilities, over 30 miles of treated water pipeline, and nearly 100 miles of raw water pipelines and canals.

2. Management of Water System Pressures and Peak Demands

Water system pressures and peak demands determine the design of the District's distribution facilities. System pressure is one of the major factors considered in determining the location of the new facilities, while peaking is a primary consideration in determining the size of the facilities.

a. System Pressure

The District's two imported water supplies, the South Bay Aqueduct of the State Water Project and the San Felipe Division of the Central Valley Project, each deliver water to the District at elevations high enough so that most of the District's service area can be furnished water by gravity or with minimal additional pumping. In the design of the distribution systems and treatment facilities, locations and alignments are selected so that the advantages of relatively high hydraulic elevations would be preserved.

The District, as a water wholesaler, provides water to its retail water agencies which, in turn, try to make effective use of any pressure advantages within their own individual distribution systems. Details regarding the management of specific retail agency's water system pressures can be found in their respective plans.

The District uses automatic protective devices to ensure that design pressures are not exceeded in its pipelines. These are primary hydraulically operated pressure relief valves and one standpipe. The District also has a comprehensive preventive maintenance program staffed by trained personnel who ensure that the system and safety devices are regularly maintained, tested, repaired, and kept in proper working order.

The District has constructed one small hydroelectric generating plant near the base of Anderson Dam where the Santa Clara Conduit of the San Felipe Division joins the Coyote Pumping Plant near Morgan Hill. The hydroelectric plant will capture energy that would otherwise have been dissipated in pressure reduction devices.

b. Peak Demands

The water demands of individual customers, and in turn of local retail water agencies, fluctuate widely from day to day and throughout the year. The District's general policy is to provide sufficient system capacity so that in the peak-use summer months, treated water can be delivered at a rate of 180 percent of the current annual volume expressed as an equivalent uniform flow rate over the full year. Historically, the District has contracted to meet three-day peak demands of up to 205 percent of the annual amount contracted for expressed as an annual flow. In contracts of the recent past, however, the District has included the provision that the District may limit the maximum flow rate for each contractor to 180 percent of its then current annual amount expressed as an annual uniform flow rate. This provides a basic level of peaking (180 percent) for treated water deliveries, and encourages treated water contractors to meet additional peaking needs from their own production and storage facilities. More specific information regarding the retail water agencies' peak demands can be found in their respective plans.

3. Corrosion Control

All District facilities potentially subject to corrosive action either have some form of cathodic protection or are monitored routinely to ensure that a serious problem is not developing.

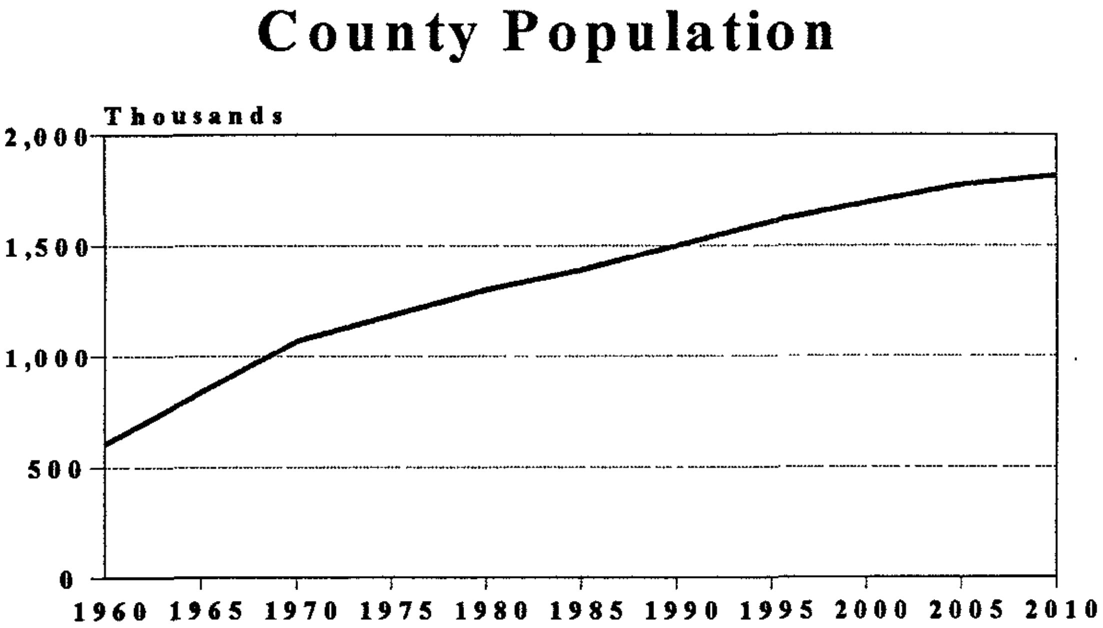
III. Water Use

A. Population and Economy of Santa Clara County

Santa Clara County is home to a very dynamic economy and 1.6 million people. The County's economy is a crucial element in the Northern California Bay Area, providing approximately 30 percent of all the jobs in the region. The County of Santa Clara ranks second in the state and fifth in the nation in manufacturing as measured by value of shipments. Nicknamed "Silicon Valley", with about one of every four of the County's jobs in high technology, the area continues to attract fast growth industries.

As the Santa Clara County economy grows, the County's population has also grown. The estimate of the County's total population for 1993 is 1,575,700. The Association of Bay Area Governments (ABAG) projects that this will rise to 1,813,000 by the year 2010. Figure 5 shows the historic County population based on the Census data, and the projected population from ABAG.

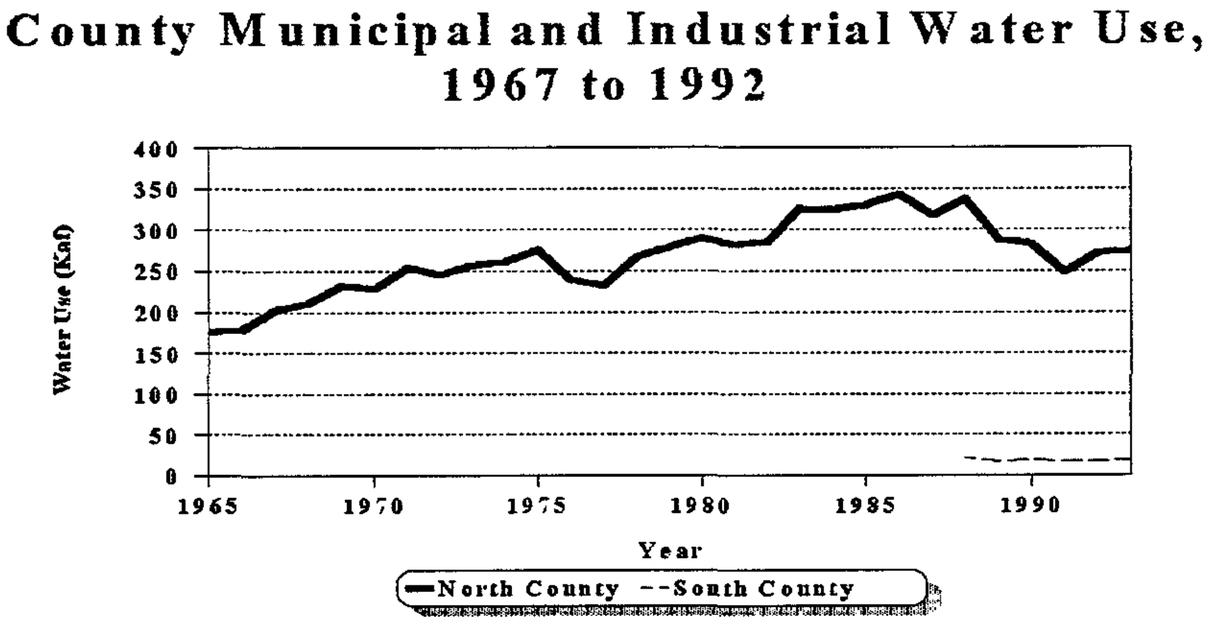
Figure 5



B. Past, Current, and Projected Water Demand

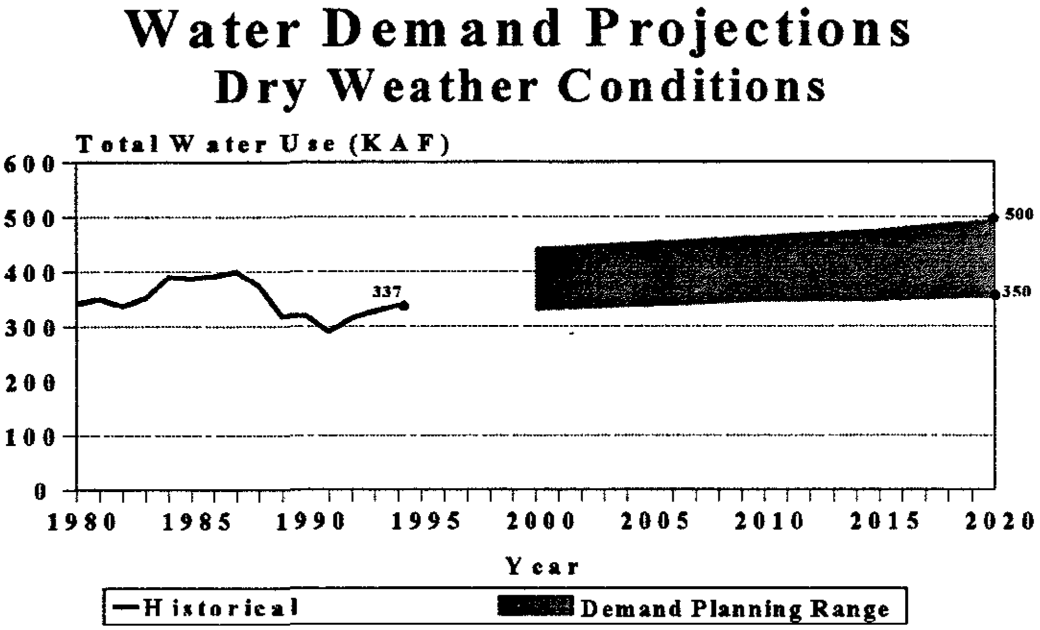
If the water use patterns of the 1980s had continued, Santa Clara County's current water needs would have been around 425,000 acre-feet. However, in response to the 1987-1993 drought, the District and the water retailers of the County have implemented water use reduction programs that have reduced this total water use by more than 25 percent. Current water use is about 337,000 acre-feet compared to a pre-drought high of 393,000 acre-feet in 1987. Historic municipal and industrial water use is shown in Figure 6.

Figure 6



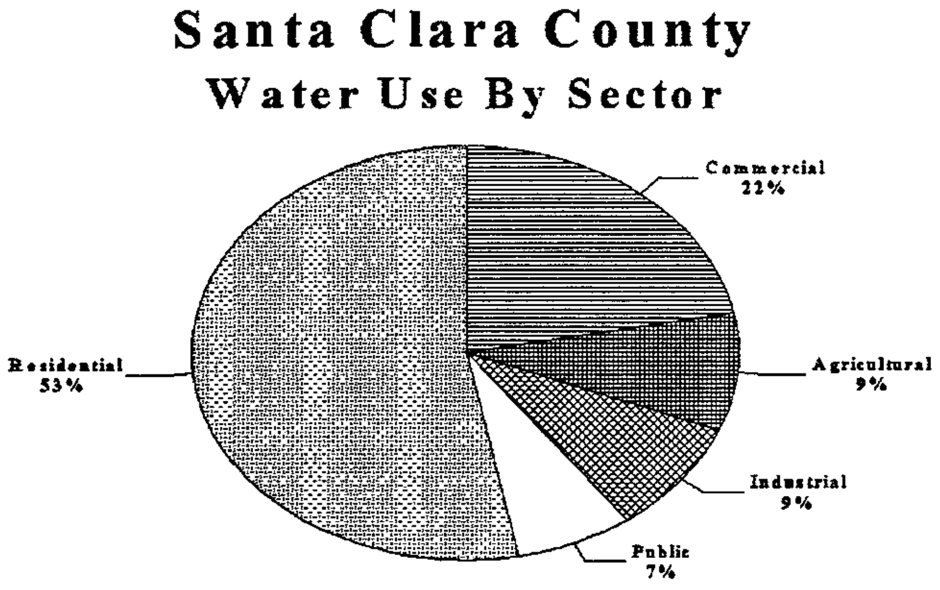
The District is continually in the process of compiling current County water use information and projecting future water needs. In the early 1970's, the District estimated that total County use by the year 2020 would be 546,000 acre-feet. Current analysis project year 2020 water demands will be within the range of 350,000 to 500,000 acre-feet, as shown in Figure 7. This planning range accounts for the uncertainty in future weather, conservation savings, and demographics.

Figure 7



Currently, District records show that the water use in the County is about 91% municipal and industrial use and about 9% agricultural use. As a wholesaler, the District does not have water use data segregated by class. However, the estimated breakdown by sector is shown in Figure 8.

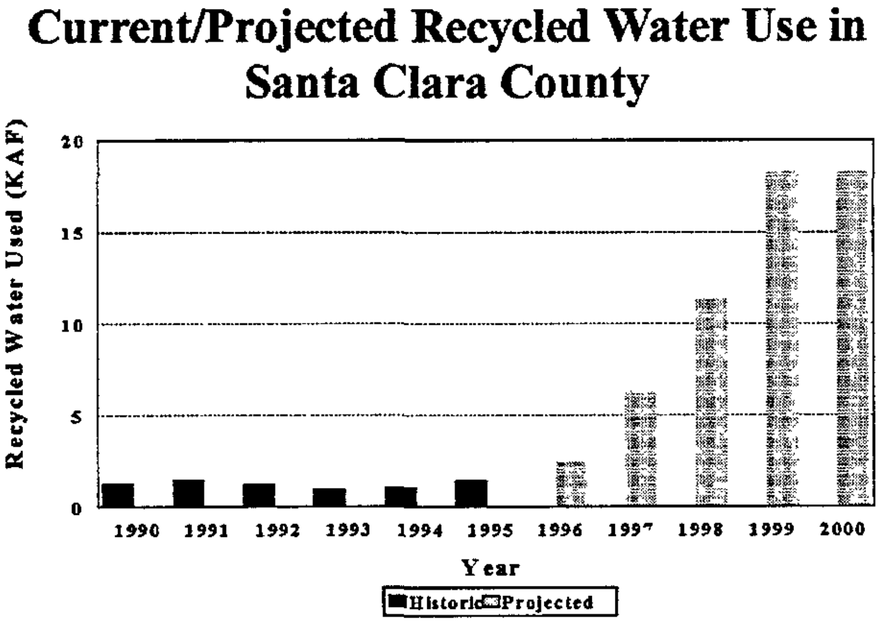
Figure 8



C. Past, Current, and Projected Recycled Water Use

Some of the water demand shown will be met by recycled water. Figure 9 shows the historical and projected recycled water use for the County. This will be discussed further in Chapter VII.

Figure 9



IV. Water Supplies

Water supplies available to the District's service area are obtained from both local and imported sources. In an average water year, local groundwater, surface water and recycled wastewater constitute about half of the area's current water supplies.

Imported supplies from the State Water Project's South Bay Aqueduct, the Central Valley Project's San Felipe Division, and the San Francisco Water Department's Hetch Hetchy Aqueduct provide on the average the remaining half of the County's needs.

The location of the District's conveyance, treatment and distribution system, and the three projects used to import water into the service area are shown in Figure 3.

A. Local Water Supplies

1. Major Streams and Reservoirs

Local surface water resources consist of runoff captured in ten District storage reservoirs and either held for direct use or recharged into the groundwater basin. These reservoirs, and two other local private reservoirs, have a storage capacity of 176,280 acre-feet, as shown in Table 2. The yield from these watersheds varies widely between wet and dry years, and most District conservation reservoirs are operated with minimal carry-over storage. The average local yields are summarized in Table 3.

Table 2. Reservoir Storage Capacities

Reservoir	Capacity at Spillway, in Acre-feet
Almaden	1,780
Anderson	89,073
Calero	10,050
Chesbro	8,952
Coyote	22,925
Guadalupe	3,723
Lexington	19,834
Pacheco (not owned by SCVWD)	6,143
Stevens Creek	3,465
Uvas	9,935
Vasona	400
Total	176,280

Table 3. Historic SCVWD's Surface Water Supply

Facility	Average Surface Flow (af/year)	Average Local Yield (af/year)	Yield as Percent of Surface Flow
UNREGULATED STREAMS			
Regnart Creek	200	100	50%
Calabazas Creek	700	500	71%
Rodeo Creek	30	30	100%
Saratoga Creek	6,100	1,900	31%
Wildcat Creek	1,500	200	13%
San Tomas Creek	1,600	300	19%
Ross Creek	900	700	78%
Penitencia Creek	4,300	900	21%
Thompson Creek	900	400	44%
Silver Creek	1,600	500	31%
SUBTOTAL	**17,800**	**5,500**	**31%**
REGULATED STREAMS			
Stevens Creek Total		3,300	32%
Reservoir Inflow	10,400		
Los Gatos Creek Total		16,600	74%
Reservoir Inflow	21,900		
Downstream Accretions	400		
Guadalupe River Total		5,500	60%
Reservoir Inflow	4,900		
Downstream Accretions	4,200		
Alamitos Creek Total		4,400	38%
Reservoir Inflow	10,900		
Downstream Accretions	800		
Calero Creek Total		4,000	54%
Reservoir Inflow	4,200		
Downstream Accretions	3,200		
Coyote Creek Total		34,700	65%
Reservoir Inflow (Coyote)	31,900		
Reservoir Inflow (Anderson)	21,100		
Llagas Creek Total		9,000	87%
Reservoir Inflow	10,400		
Uvas Creek Total		8,000	16%
Reservoir Inflow	27,100		
Downstream Accretions	24,500		
SUBTOTAL	**175,900**	**85,500**	**49%**
TOTAL SURFACE SUPPLY (AF/YR)	193,700	91,000	47%

2. Major Groundwater Subbasins

The groundwater basin in Santa Clara County is divided into three interconnected major subbasins: the Santa Clara Valley, the Coyote, and the Llagas Subbasins. In previous District planning studies, it has been estimated that the three groundwater subbasins, the Santa Clara Valley, the Coyote, and the Llagas, have maximum operational storages of 250,000 acre-feet, 55,000 acre-feet, and 150,000 acre-feet, respectively.

The Santa Clara Valley Subbasin in the northern part of the County is the largest, and serves most of the population of the County. The southern part of the County is served by the smaller Coyote and Llagas Subbasins. There are no surface water treatment plants in the southern part of the County, and the population relies entirely on groundwater for its supply. A minor amount of surface water and recycled water is delivered for agricultural and nonpotable purposes.

Groundwater normally accounts for over fifty percent of the water used in Santa Clara County. In 1987, groundwater accounted for 55 percent, or 216,000 acre-feet, of the water used in the County. Due to drought conservation efforts and the completion of a new water treatment plant, groundwater usage has been reduced in the last few years. Local reservoirs and groundwater currently supply about 42% of the County's water.

The groundwater basin is recharged through natural percolation of rainfall and local stream runoff and is also extensively recharged artificially by off-stream percolation ponds. In the major watersheds, runoff is retained in the conservation reservoirs and released into spreading basins or ponds for additional percolation into the groundwater basin. In addition, the District operates a raw water distribution system which delivers imported water into streams and ponds for groundwater recharge. Groundwater is then pumped by individuals and retail water agencies to meet local needs.

B. Imported Water Supplies

1. State Water Project, South Bay Aqueduct

South Bay Aqueduct (SBA) water has been imported to the northern part of Santa Clara County for both direct treatment and groundwater recharge since 1965. The District's SBA entitlement is 100,000 acre-feet per year. The quantities received since the completion of the SBA are shown in Figure 10.

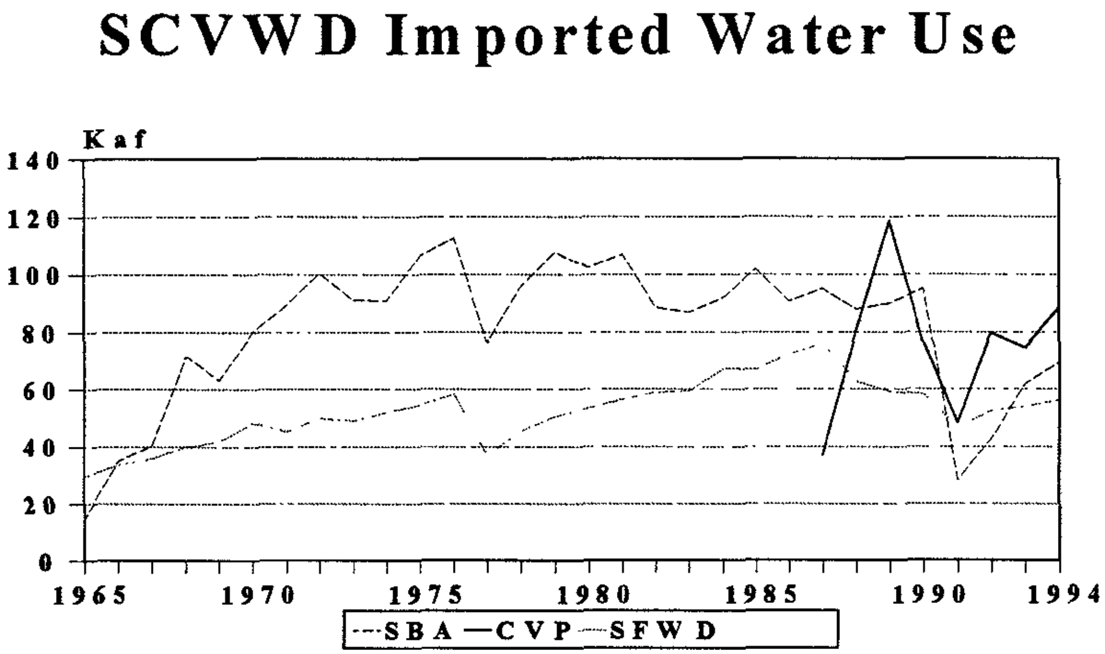
2. Central Valley Project, San Felipe Division

The first deliveries of federal water to the District from the San Felipe Division of the Central Valley Project (CVP) were received in June 1987. The District's CVP entitlement is 152,500 acre-feet per year. The quantities received since 1987 are also shown in Figure 10.

3. City of San Francisco, Hetch Hetchy Aqueduct

The District does not contract for Hetch Hetchy water itself, but several of its water retailers have water supply contracts with the San Francisco Water Department for Hetch Hetchy water. The County normally receives over 70,000 acre-feet each year from Hetch Hetchy. Deliveries are made directly to seven retail water agencies serving the cities of Palo Alto, Sunnyvale, Mountain View, Los Altos Hills, Los Altos, Santa Clara, San Jose and Milpitas in the northern part of the County. The quantities received are also shown in Figure 10.

Figure 10



There are continuing discussions among agencies located in the central and south San Francisco Bay region, through the Bay Area Water Resources Council, to explore means for responding to area water shortages.

In particular, the District has been discussing with the San Francisco Water Department the potential benefits of interties between the District's system and the Hetch Hetchy system for emergency situations. An intertie is being planned from the District's Milpitas pipeline to the Hetch Hetchy aqueduct for short-term transfers of emergency supplies.

4. Short Term and Long Term Transfers

The recent prolonged drought in California has prompted renewed interest in the concept of water marketing, which can be defined as the voluntary transfer, lease, or sale of water rights. Despite general consensus that some form of water marketing must be facilitated, there is considerable debate about how this activity should be carried out.

The major unresolved issues surrounding water marketing involve environmental and third-party impacts, protection of water rights, the role of state government, the role of water districts, and the need for additional water storage and conveyance facilities. Rules for water transfers are contained in proposed state and federal legislation, and in the interim policies of the U.S. Bureau of Reclamation and other government agencies. The ultimate form of these legislative and administrative rules governing water transfers will have a significant effect on the extent to which this alternative becomes a part of the District's imported water supplies. The purpose of this section is to examine the opportunities and feasibility of using short-term and long-term water transfers to supplement the District's water supply needs during future critical dry periods. Sources of transfer water are the water contractors of the CVP and the SWP and independent water right holders.

a. CVP Transfers

In October 1992, federal legislation (Title 34, PL 102-575) was enacted which increased the ability of CVP contractors to transfer their allocations of CVP water. This legislation, called the Central Valley Project Improvement Act (CVPIA), authorizes water transfers from "all individuals or districts" receiving CVP water "to any other California water use or agency... for project purposes or any purpose recognized as beneficial under applicable State law." Prior to this legislation, CVP contractors were prohibited from transferring water between project purposes (e.g., from irrigation to M&I) and from transferring water to individuals or districts outside the CVP service area.

In March 1993, the Bureau of Reclamation completed interim guidelines for water transfers. Under these guidelines, all transfers require review and approval by the contracting officer. All long-term transfers are subject to continuing annual review and may be "conditioned, temporarily suspended, or terminated" if the contracting officer determines that there are any adverse impacts to CVP operations or the environment.

Among CVP contractors, those with the most reliable source of transfer water are the San Joaquin River Water Rights Exchange Contractors, which include the San Luis Canal Company, the Columbia Canal Company, the Firebaugh Canal Water District, and the Central California Irrigation District. The Exchange Contractors have a unique and perpetual contract with the Bureau of Reclamation for the delivery of 840,000 acre-feet per year of CVP water from the Delta-Mendota Canal in place of water that would have other wise been taken by the Exchange Contractors from the San Joaquin River under riparian and pre-1914 appropriative water rights.

The contract provides that, based on the total annual inflow to Shasta Reservoir, this CVP supply may be reduced by no more than 25 percent. Such shortages have occurred only three times within the last 42 years. Prior to enactment of the CVPIA, districts or individuals receiving CVP water under the Exchange Contract could not transfer this water.

Another reliable source of transfer water within the CVP is the Sacramento River Water Rights Contractors. Like the Exchange Contractors, these contractors receive CVP water in place of water that would otherwise be taken from the Sacramento River under riparian water rights, and their CVP supply is subject to shortages of no more than 25 percent based only on the total annual inflow to Shasta Reservoir. However, the Sacramento River Water Rights Contractor's settlement contract is not perpetual, and will expire in the year 2016. The Bureau will probably seek to revise the shortage criteria at that time. Also, any transfer water obtained from sources that are a tributary to the Sacramento-San Joaquin Bay Delta Estuary will be subject to significant environmental requirements, including dedication of a portion of the transfer water for fish and wildlife purposes.

Other sources of transfer water within the CVP are primarily irrigation contractors. CVP irrigation water, whether upstream or downstream of the Delta, is subject to significant shortages. Even if irrigation water is transferred for M&I use, it will always retain the relatively low reliability of its original purpose.

b. SWP Transfers

Although a number of SWP contractors have transferred water in short-term agreements, the DWR has approved such transfers on a case-by-case basis. There are no formal policy guidelines addressing transfers of SWP water, except for a general "golden rule" that transfers by one State Water Contractor cannot jeopardize the water supply or financial conditions of other nonparticipating State Water Contractors.

During the most recent drought, agricultural contractors suffered severe shortages in supply, which made it difficult for them to cover their fixed cost associated with their SWP entitlement. As a result of the agricultural contractors' drought-related financial problems, the DWR and the State Water Contractors began to consider a number of alternatives, including rules for transfer of entitlement, methods of short-term water marketing among SWP Contractors, and proposals to modify the SWP agricultural and M&I water shortage criteria. In addition, the recent drought prompted the DWR and various SWP contractors to establish a Water Purchase Committee that will, through the DWR, buy transfer water on behalf of SWP contractors.

DWR is currently completing the environmental requirements for future water purchases and working with the SWP contractors to draft an appropriate contract amendment that will allow for cost recovery of water purchases over a 3 to 5 year period. DWR and the SWP contractors proposed a 1-year agreement to purchase water for use in 1994. Such a 1-year water purchase agreement requires less environmental documentation and would serve as a pilot program for future longer term purchases by the Water Purchase Committee. On March 28, 1994, the District's Board of Directors approved participation in the 1994 Water Purchase Committee.

c. Independent Transfers

Independent transfers involve the purchase of water from agencies or individuals who divert water under their own appropriative water rights, independent of the CVP and SWP. Appropriative water rights are granted by the SWRCB to agencies or individuals who have demonstrated that they have the ability to divert a supply of water and put it to beneficial use, and that this supply is a quantity in excess of that needed by riparian right holders and pre-existing appropriative right holders. The California Water Code allows appropriative water rights holders to transfer their water to another water user without fear of forfeiture if statutory procedures which govern approval of transfers are followed. However, many water rights holders are reluctant to enter into long-term transfer agreements or to enter into short-term agreements for five or more consecutive years.

In 1989, the District purchased 90,000 acre-feet of water from Yuba County Water Agency, which was subsequently stored in San Luis Reservoir and used to alleviate the impacts of the recent drought. In 1991, the District purchased and transferred about 17,000 acre-feet of water from Placer County Water Agency. Due to carriage water losses through the Delta, the amounts of Yuba County and Placer County water delivered to the District were 69,000 acre-feet and 14,000 acre-feet respectively. All of the water was delivered to Santa Clara County through the SWP facilities. The cost of Yuba County water was $45 per acre-foot, and for Placer County, $100 per acre-foot. After losses and conveyance costs are included, the total costs to the District were approximately $105 per acre-foot, for the Yuba County water, and $179 per acre-foot for the Placer County water.

d. State Drought Water Bank

In February 1991, as the State entered its fifth year of drought, Governor Wilson established the Drought Action Team. One of the recommendations of this team was to create an emergency Drought Water Bank which could facilitate the purchase and transfer of water from areas of the state with excess supply to those areas in need of additional supply. DWR was responsible for operating the Drought Water Bank.

During 1991, the Drought Water Bank purchased a total of 820,805 acre-feet through 351 contracts for $125 per acre-foot. About 51 percent of water bank supplies came from fallowing farmland, 32 percent from groundwater, and 17 percent from stored water. About 400,000 acre-feet was sold to cities and water districts, and 270,000 acre-feet was stored in Lake Oroville for the following year. Most of the remaining 160,000 acre-feet was used to maintain Delta salinity standards. The District purchased 19,750 acre-feet from the Bank for $175 per acre-foot at the Tracy Pumping Plant. Additional conveyance costs were $50 per acre-foot, for a total cost of $225 per acre-foot.

In March 1992, Governor Wilson announced the continuation of the Drought Water Bank, and over 143,000 acre-feet of water was purchased for $50 per acre-foot. The District did not participate in the 1992 State Drought Water Bank.

The 1991 and 1992 State Drought Water Banks demonstrated the effectiveness of transfers to meet short-term water needs, and it is likely that a modified form of the Drought Water Bank will continue in the future as a mechanism to facilitate short-term transfers during drought years. One important impact that the State Drought Water Bank had on the short-term transfer market was that it stabilized the price of transfer water. For future State Drought Water Banks, it is likely the DWR will have to complete additional environmental documentation, since concern over the potential for cumulative impacts of short-term transfers was expressed.

Although the State Drought Water Bank represents an important option for the District in a critically dry year, there is a risk that the District will not be able to obtain all the water it needs from the bank. The highest priority of the bank is to provide water for "extreme critical needs," which include "domestic use, health, sanitation and fire protection." After extreme critical needs are met, water is allocated through a "leveling" process to meet the remaining needs of agriculture and M&I water users. M&I participants must be able to show that they are making maximum use of available water supplies, have total water supplies of less than normal demand, and have a voluntary or mandatory water rationing program in effect.

In addition to the risk that the District's purchases may be restricted by the critical needs of other banking participants, there is also the risk that the State Drought Water Bank may not be in existence during a year in which the District needs to buy water. The bank may not be operated if statewide hydrologic conditions are "normal," and yet, if local conditions are dry or the District wants to rebuild groundwater storage, these may be years in which the District may still wish to supplement its imported water supplies.

To effectively use and store both local and imported water supplies, the District is maximizing the use of its imported water within the County and actively pursuing banking alternatives for the remaining imported water entitlements in calendar year 1995.

C. Water Supply Monitoring Programs

1. Surface Water Monitoring

A network of about 120 hydrologic gages in the County monitor streamflow, reservoir depth, and rainfall. This information, together with metered data from the District's raw water distribution system, is used to estimate surface water distribution, the runoff from the local watersheds, and the quantities of local and imported water recharged to the groundwater basin. Evaporation losses from all reservoirs are calculated monthly. This analysis is used as part of water rights, dam licensing, and contractual reporting requirements.

2. Groundwater Storage Monitoring and Land Surface Subsidence

Prior to the importation and artificial recharge of water from the State Water Project (SWP) in 1965, groundwater in the Santa Clara Valley Subbasin was being seriously overdrafted, as shown in Figure 11. Land surface subsidence, up to 13 feet in some areas of downtown San Jose, caused an enormous amount of damage associated with flood protection, drainage facilities, collapsed wells, and changes in grades of pipelines, streets and highways. Over 200 well casings collapsed. In US Geological Survey Paper 497-F, J. F. Poland estimates that "the volume of subsidence (pore space reduction)... from 1912 to 1967 is about 800,000 acre-feet". The District monitors five subsurface compaction wells, as well as the depth to groundwater in several hundred groundwater wells, in order to detect the possibility of such a serious overdraft situation ever occurring again.

The depth to groundwater is monitored by the District monthly in about 30 wells, and quarterly in about 200 wells. Index wells for each of the three subbasins give an approximate indication of the trends in each subbasin and are shown in Figure 12. The depths, elevations, and changes in elevation are mapped quarterly, and storage in the major subbasins is calculated.

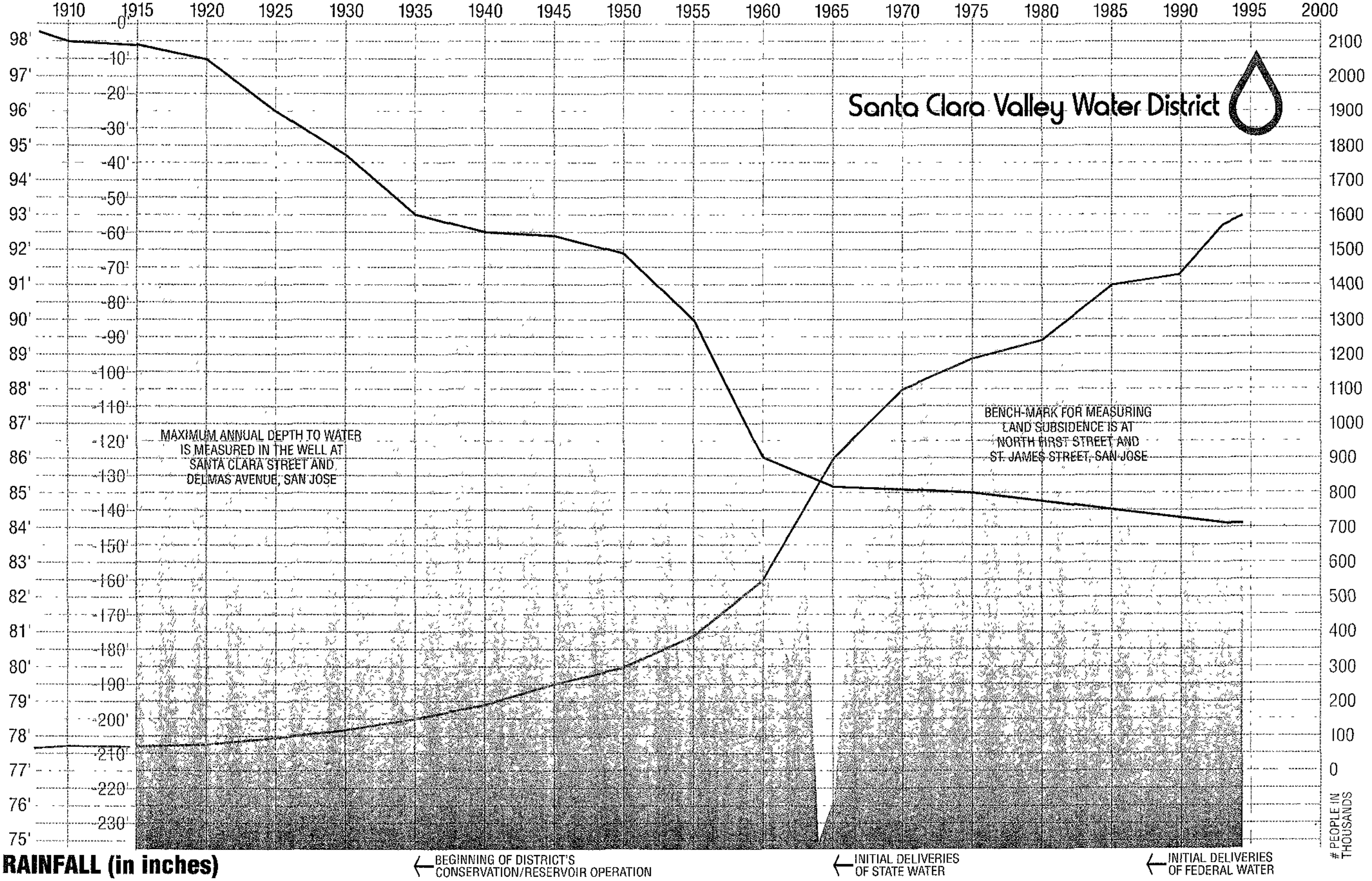
3. Metering

District Ordinance 70-1 and Resolution 91-53 specifies that wells which produce over a certain quantity of water be metered if cost effective to do so. In the northern portion of the County (Zone W-2), the production levels are 4 acre-feet or more of agricultural water or 1 acre-foot or more of non-agricultural water. In the southern portion of the County (Zone W-5), the production levels are 20 acre-feet or more of agricultural water or 2 acre-feet or more of non-agricultural water. All wells which meet the production criteria and a cost feasibility analysis are metered.

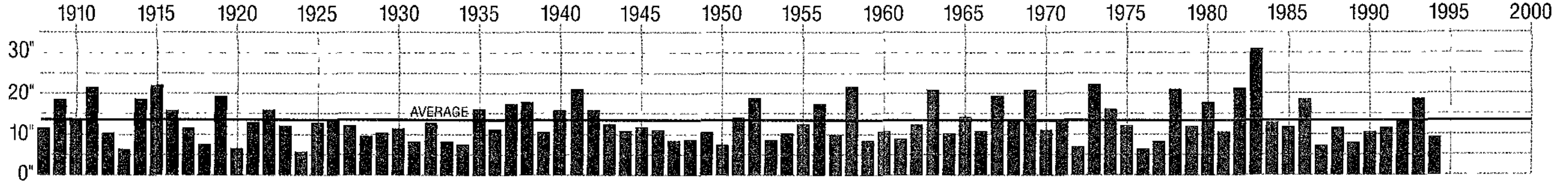
The District also operates a facility for the testing and overhauling of both groundwater and surface water production meters. Meters are tested regularly based on volume measured or 'time of service' criteria. The program follows standard testing procedures and guidelines established by the American Water Works Association.

The District also performs volumetric testing on the retail water agencies' well production meters that are used to report production to the District to insure that they meet standards.

DEPTH TO WATER, LAND SUBSIDENCE, POPULATION



RAINFALL (in inches)



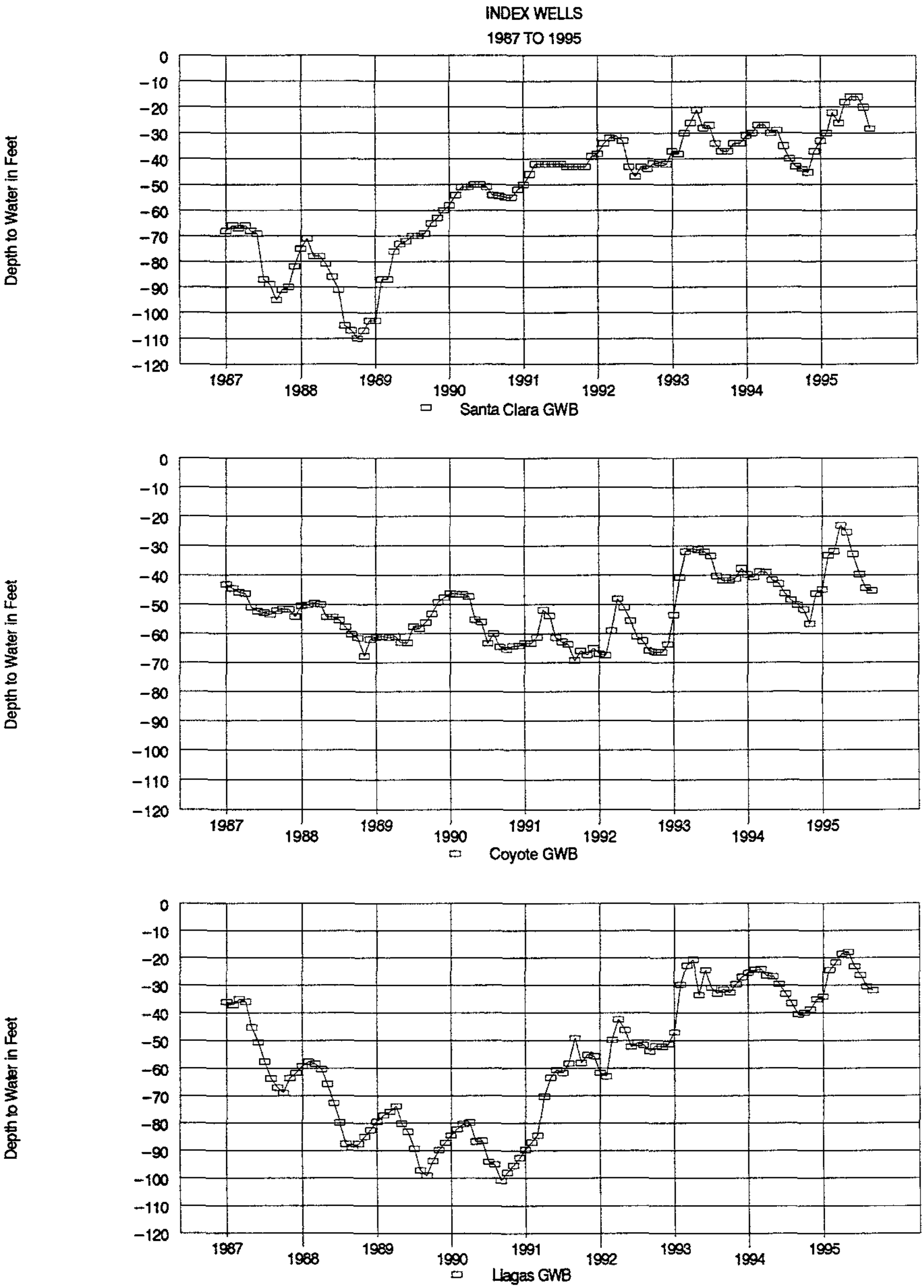

INDEX WELLS
1987 TO 1995

Figure 12

V. Water Supply Deficiencies

In the past, the District has recognized the need for additional water supplies for its rapidly increasing population, and has been successful in securing long-term imported water supply contracts. The District signed its contract with the Department of Water Resources in 1961 for an entitlement supply of 100,000 acre-feet annually from the State Water Project. The District concurrently pursued Congressional Authorization of the San Felipe Division of the Central Valley Project. The project was authorized in 1967, and a water supply contract with the U.S. Bureau of Reclamation was signed in 1977 for an entitlement of 152,500 acre-feet per year. Construction started on the San Felipe Project in 1978, and was completed in mid-1987.

A. Long Term

In spite of the District's planning, water management and conservation efforts, its water needs equaled and began to exceed its long-term average water supply from existing facilities in the early 1980's. With the San Felipe Division now in operation, the District estimates that its total water supply under average year conditions will be able to meet its annual water needs until sometime well beyond the year 2000.

However, the drought years of 1987 through 1993 have shown that further analyses must be done to ensure adequate supplies in times of statewide and local dry periods. In particular, the most recent drought has emphasized the vulnerability of imported supplies from the SWP, the CVP, and the Hetch-Hetchy Project. It is also apparent that the District needs to examine issues such as additional local storage capacity for imported supplies and reexamine the feasibility of alternative supplies such as water recycling. Potential water supply deficiencies, and alternatives to meet these deficiencies are currently being addressed in the District's Integrated Water Resources Plan.

The Department of Water Resources uses a Water Delivery Risk Analysis (WRDA) procedure to determine the amount of State Water Project deliveries that can be approved for delivery each calendar year. One major objective of the WDRA procedure is to ensure that prudent carryover storage will be maintained to support deliveries in subsequent years. The WDRA procedure has been used to ensure that the Project, as a minimum, maintains sufficient carryover storage to meet the next year's water quality requirements in the Delta and supply at least an emergency level of water deliveries. During the 1987-1993 drought, the State Water Project storage reserves were drastically depleted.

The potential for future water supply shortages from the State Water Project is significant. According to the Department of Water Resources, the existing State Water Project facilities currently produce an Average Annual Critical Period Supply (AACPS) of 2.26 million acre-feet per year. Construction of additional State Water Project facilities appear to have been delayed pending the Bay-Delta hearings on water quality issues and environmental impacts of transporting additional water through the Delta.

The availability of San Felipe Division water supplies beginning in 1987 has reduced, but not eliminated, the District's risk of future deficiencies. The San Felipe Division water service contract sets forth minimum quantities of water that the District must pay for, but allows the delivery of the maximum contracted entitlement provided that water is available in the Central Valley Project system. The minimum quantity originally for the first full year of delivery in 1988 was 16,000 acre-feet, and for the second year, 22,000 acre-feet. Ironically, within two years of receiving San Felipe Project water, the District was requesting its full entitlement amount of 152,500 acre-feet to reduce the impact of drought. The District has recently been involved in negotiations with the Bureau of Reclamation to establish a CVP Municipal and Industrial (M&I) Shortage Policy. This policy would set a minimum level of imported water deliveries to CVP M&I users.

B. Short Term

A Case Study: the 1987-1993 Drought

In 1988, after two years of below average rainfall, the District's Board of Directors recommended a 15 percent voluntary water conservation program. The District also began working closely with local retailers to formulate a comprehensive water use reduction program. This cooperation resulted in the 1989 *Drought Water Management Plan.*

The 1989 Drought Water Management Plan called for a 25 percent reduction from the 1987 water use base level. This was achieved through: 14 cities adopting water use prohibitions and conservation measures, public awareness, and retailers adopting inverted rate schedules or penalty structures.

Only the March 1989 rains saved the County from a 45 percent mandatory water use reduction program. These rains also made available water from the Yuba County Water District which the District purchased.

The 1989 Drought Management Plan was a success. Water use in 1989 was reduced by 20 percent from the 1987 levels. In 1990 the Board recommended a mandatory water use reduction program with rate incentives from April to October. The board also voted to continue the public awareness campaign indefinitely.

In 1991, the District had a goal of a 25% reduction in usage from 1987 levels, but achieved a 28% reduction. The following year, 1992, the goal was 15% and 22% was achieved. December of 1993 brought significant rain to the County signaling the end of the drought.

C. Frequency and Magnitude

The occurrence of water shortages, based on the 1922 to 1993 hydrology for three different levels of water demand years 2000, 2010, and 2020 are shown in Figure 13. The projected maximum shortages are estimated to be 71,000, 140,000, and 175,000 acre-feet per year respectively for these water needs.

Another way to view this is by a cumulative probability distribution. A cumulative probability distribution is a plot of the probabilities of water shortages smaller than or equal to a particular magnitude. Figure 13 shows this distribution for the three water demand levels, 2000, 2010, and 2020. As shown by figure, the shape of these distribution curves does not change very much as water needs increase in the future; that is, for the three demand levels, severe shortages can be expected more than 20 percent of the time with the magnitudes increasing from 71,000 to 175,000 acre-feet per year as projected water needs increase.

Figure 13.

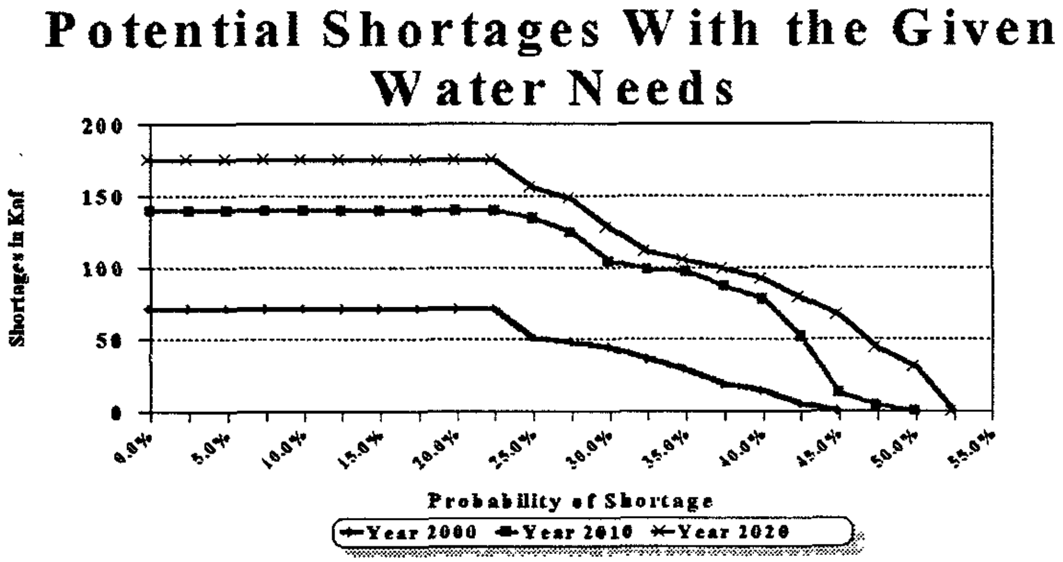


Table 4 shows the recorded and projected water supply and needs for the county. While shortages as high as 175,000 acre-feet per year could occur in the year 2020, shortages of more than 100,000 acre-feet per year could occur within 10 years if a critical dry period occurs and no action is taken to alleviate the problem.

Traditional water resources planning investigates a number of alternatives with the goal of identifying the least-cost option. This approach does not attempt to involve the public and interested agencies and is narrowly focused to solve specific problems without evaluating secondary impacts. During the past 10 years, the traditional approach has proven difficult within communities that demand public agencies to be more responsive to environmental concerns and local needs.

Table 4. Recorded and Projected Water Supply, Demand and Shortages for the Critical Dry Period with the CVP M&I Shortage Policy (in thousands of af/year)

Years	1995	2000	2020
Critical Dry Period, Average Water Supply, and Storage Withdrawal	350	390.7	390.7
Critical Dry Period (Hot Weather) Demand	350	442.7	534.2
Critical Dry Period Average Shortage	0	52	143.5

Rather than striving for agreement on one single alternative, the District has decided to establish a procedure that will build consensus on the underlying criteria for evaluating project alternatives. This screening criteria would then be applied to all of the alternative projects to determine which would move forward to the next step in the planning process, an EIR. Screening criteria would be developed in an open and participatory manner to build consensus among competing stakeholder groups. The District's function would be transformed from advocating a single water supply alternative to providing leadership, vision, and technical expertise to facilitate countywide agreement and collaborative decision making, By building on a common understanding of problems and incorporating diverse interests, this process, known as an Integrated Water Resource Plan (IWRP), can foster the development of an acceptable water supply solution.

VI. Urban Water Shortage Contingency Plan

The supplies available during a critically dry period are sufficient to meet the District's current water demand of 350 thousand acre-feet without shortage.

A. Stages of Action

The District has drawn from its experience in responding to the 1987-1993 drought to develop a staged response plan to water supply shortages. This plan ties action stages to specific reductions in supply. The plan includes both voluntary and mandatory components and addresses shortages of up to 50% of full supply.

Stage 1	Reduction in overall supply (any source) which results in an unserved demand of up to 15% of total projected demand.
Stage 2	Significant reduction in one or more sources of supply which results in an unserved demand of up to 25% of the total projected demand.
Stage 3	Serious reduction in two or more sources of supply which results in an unserved demand of up to 35% of the total projected demand.
Stage 4	Critical reductions in all imported sources and serious shortage in local groundwater basins which result in an unserved demand of up to 50% of the total projected demand.

As a wholesale supplier of water, the District must work closely with local retail water agencies to implement any action stages. As part of this cooperative effort, the District relies on these retail agencies to determine priorities for use of available water.

1. Description of Stages

Stage 1: 15% Voluntary Program

- Institute voluntary water use reduction goals and water use prohibitions.
- Coordinate water use reduction program with local retail agencies.
- Initiate Public Information Program.
- Prepare and distribute water conservation literature through local retail water suppliers and other agencies.
- Initiate a media campaign including news releases and an advertising campaign.

Stage 2: 25% Mandatory Program

- Continue and intensify all activities undertaken during Stage 1.
- Institute mandatory water use reduction program.
- Increase promotion of the installation of water saving devices such as ULF Toilets and showerheads.
- Seek to acquire water transfers to augment sources of imported water.
- Enhance water supply system operation to increase efficiency.
- Monitor and report on monthly production to ensure compliance with necessary reductions.

Stage 3: 35% Mandatory Program

- Continue and intensify all activities undertaken during Stages 1-2.
- Institute additional water use prohibitions.
- Coordinate with local agencies to defer installation of all new landscape.
- Lobby local agencies to enforce ban on use of water from hydrants or other unmetered sources.
- Monitor and report on weekly production to ensure compliance with necessary reductions.

Stage 4: 50% Mandatory Program

- Continue and intensify all activities undertaken in Stages 1-3.
- Implement inclining rate for ground water pumping.
- Institute a ban on the use of potable water for irrigation.

2. Mandatory Provisions

Because of its status as a special district, the Santa Clara Valley Water District does not have the authority to adopt ordinances or impose mandatory provisions restricting the wasteful use of water. However, the District has developed model water use prohibitions and restrictions, listed in Appendix C, and has worked closely with local retail agencies to encourage their adoption.

Additionally, the District has maintained a listing of all water use prohibitions adopted within Santa Clara County. A summary of these prohibitions and a matrix of retail agencies employing them have been included in Appendix D.

3. Consumption Limits

As one of the wholesale supplier of water for Santa Clara County, the Santa Clara Valley Water District has no authority to set or enforce consumption limits at the retail level. As a result, this Contingency Plan does not include per capita allotments, inclining-block rates, penalties, or incentives for conservation for any customer class. The development of such mechanisms is within the purview of the local retail water agencies.

At the wholesale level, the District works with local retail water suppliers to establish groundwater production figures. By working closely with the retail water agencies, the District has effectively set and achieved up to 25% mandatory rationing levels.

4. Penalties or Charges For Excessive Use

The District Act (Section 26.5) was amended in 1989 to allow the District to develop overproduction charges for groundwater pumping. This provision allows the District the flexibility to provide any necessary incentive which may be required to achieve cooperation on the part of local retail water suppliers. Over production charges are three times the basic user fee for groundwater pumping.

5. Draft Water Shortage Contingency Plan

A draft water shortage contingency resolution is included in Appendix E.

B. Revenue Impacts

Although the District Board of Directors has the ability to adjust water rates biannually, two mechanisms are in place that help the District overcome the financial impacts of water supply shortages. The District maintains a Supplemental Water Supply Appropriation which sets aside funds that can be used to purchase additional water when needed. For fiscal year 1994-95, the balance in this fund was 20 million dollars. The District also maintains a Rate Stabilization Reserve to assist in avoiding frequent water rate adjustments.

C. Water Use Reduction Documentation

The District produces a monthly Water Supply and Use Report that includes the following information:

- monthly and season-to-date rainfall at four rainfall stations within the county
- reservoir storages and capacities
- monthly recycled water deliveries
- monthly and year-to-date water use for each major water retailer in the county
- groundwater basin condition (depth-to-water data).

The report shows how the total major retailer year-to-date water use compares to 1987 water use, the past year's water use, and the projected water use for the current year. During times of shortage, the water use by retailer tables also compare current use with the water use targets. These reports are generally available within four weeks of the end of each month.

VII. Water Recycling

The District and several local agencies in Santa Clara County are investigating two types of water recycling and reuse projects that can supplement water supplies: potable and nonpotable. These two types of projects have very different implementation issues, schedules for implementation, and project costs. The export of nonpotable water to the Central Valley for agricultural use in exchange for other raw water supplies is also being investigated and is described in this section.

A. Nonpotable Water Recycling

Recycled water has been used in California since the 1890s. A 1987 survey found that 300,000 acre-feet per year of recycled water was used in California. Of this quantity, approximately 70 percent was used for irrigating landscape plants and agricultural crops. About 2,000 acre-feet per year of recycled water is currently being used for landscape in Santa Clara County, with another 12,000 acre-feet to be on-line by 1998.

In July 1993, the District's Board adopted a nonpotable water recycling policy which provides for the District's financial participation in nonpotable water recycling projects in the county. The District will provide financial assistance equivalent to the avoided cost of new water supplies for nonpotable recycled water produced to encourage the development of water recycling. Such water must, however, supplement the county's water supply and replace firm water demands that are presently met or would be met in the future by supplies from the District.

Several water recycling projects under investigation by either local agencies and /or the District are described below.

1. San Jose/Santa Clara Water Recycling Project

The San Jose/Santa Clara Water Pollution Control Plant (SU/SC WPCP) is a jointly-owned regional wastewater treatment plant with a design flow capacity of 167 mgd. The plant effluent is tertiary treated to high-quality standards, and may be reused for industrial process and agricultural and landscape irrigation.

In November 1990, the District's Board of Directors approved a cost-sharing agreement with the City of San Jose for investigating the potential reuse of treated effluent from the SJ/SC WPCP in the Golden Triangle. Three project alternatives were developed, and the project, which had the potential to extend beyond the Golden Triangle, was selected and approved by the San Jose City Council, contingent upon environmental review and the acceptance of the South Bay Action Plan.

The City of San Jose has conducted a study for the expanded area and has reassessed the market for nonpotable recycled water. The study has shown that approximately 12,000 acre-feet per year, or 20 mgd, of recycled water could be delivered beginning in 1998. Additional demands of 28,000 acre-feet or 50 mgd in the Greater San Jose area have been identified and could be delivered in the future. Most of this water would displace District supplies. The average unit cost of nonpotable recycled water is estimated at $1,110 per acre-foot from the San Jose/Santa Clara water recycling projects.

2. Sunnyvale Water Recycling Project

The Sunnyvale Water Pollution Control Plant (WPCP) has a design flow capacity of 29 mgd for the treatment of wastewater from the City of Sunnyvale. A wastewater recycling program developed in 1991 identified a short-term goal of recycling 20 to 30 percent of the high-quality effluent within the following three years. A long-term goal of this program is to reuse 100 percent of the effluent generated from the plant.

The city has started a major capital improvement program to implement the short-term goal of this program. Approximately 1 mgd of recycled water is being delivered to a park, a golf course, and nearby sites. An additional 1.2 mgd will be delivered to serve the demands north of Highway 237 in late 1995. This recycled water could displace either Hetch Hetchy supplies or District supplies. The unit cost of recycled water produced from the Sunnyvale WPCP for these projects is estimated at $610 per acre-foot.

3. Gilroy Water Recycling Project

The existing Gilroy/Morgan Hill Wastewater Treatment Facility provides wastewater treatment for the Cities of Gilroy and Morgan Hill with a current capacity of 6.1 mgd. A long-term plan was developed in 1984 and outlined the phased implementation of wastewater and disposal facilities for the next 20 years. The long-term plan proposed a new 7.5 mgd secondary wastewater treatment facility. Construction of this facility was completed in 1995. About 3 mgd of the secondary effluent will undergo tertiary treatment at a new water recycling facility to meet the higher standards for reuse required for landscape and agricultural crop irrigation, and some industrial processes. The water recycling facility is proposed to be expanded to 12 mgd by the year 2018.

Currently, 100 acre-feet per year of recycled water is being used in the Gilroy area. An additional 2,250 acre-feet per year of recycled water will be delivered in the near future, all of which is proposed to displace district supplies. The cost of recycled water is estimated at $240 per acre-foot for treatment; this cost is low because the project will use an existing distribution system constructed by the District.

4. Palo Alto Water Recycling Project

The Palo Alto Regional Water Quality Control Plant provides wastewater treatment and disposal capacity of 38 mgd for the Cities of Palo Alto, Mountain View, Los Altos, and Los Altos Hills. In April 1992, a Water Recycling Master Plan was completed. Two purposes of pursuing a water recycling project were identified in this plan: to provide additional water supply to the water utilities in the study area and to reduce the wastewater constituent mass metal loadings discharged to the South Bay from the plant.

Approximately 1,100 acre-feet per year of recycled water is currently being delivered to the Palo Alto Municipal Golf Course and nearby sites. The City of Mountain View uses 464 acre-feet of blended water, primarily at the Shoreline facility. An additional 3,700 acre-feet per year of recycled water deliveries were suspended because Palo Alto has met its discharge requirements to the bay and because the costs involved were prohibitive. A total of 4,700 acre-feet per year of recycled water is still planned to supplement the existing potable water supply from the San Francisco Hetch Hetchy Water System. The estimated unit cost of recycled water developed by the Palo Alto Regional Plant is $660 per acre-feet. It is not anticipated that this recycled water would displace District water but would displace water from the Hetch Hetchy system.

B. Potable Reuse of Recycled Water

Recharging the underlying ground water aquifer with recycled water is a potential source of supply for the county that is independent of the hydrological conditions of the valley. In a joint study with the City of San José, the District has determined that up to 25,000 acre-foot per year of recycled water could be developed for groundwater recharge under the criteria being proposed by the State Department of Health Services (DHS).

DHS allows indirect reuse (i.e., groundwater recharge) of recycled water for a potable drinking water supply. Currently, the California Office of Drinking Water is developing guidelines for planned projects to recharge recycled water into groundwater basins. The guideline would allow two principal methods for groundwater recharge: surface recharge through percolation, and direct injection. Using surface reservoirs to blend recycled water with potable is now under consideration. This blended water can then be used as groundwater recharge or go directly to a conventional water treatment plant.

WateReuse, through its Potable Reuse Regulatory Committee, has drafted and submitted to state agencies a proposal to use a surface reservoir as the blend facility for potable recycled water. The recycled water would have to meet the same stringent water quality requirements as for groundwater recharge and in addition could also have to reduce the nutrients in the water that could cause algal growth in the reservoir. From this reservoir, water would be withdrawn and recharged or transferred through pipelines and used at a conventional water treatment plant. This new mode of operation better complements the District's water system and would not compete with limited recharge facilities. District staff has investigated this mode of operation and has determined that 60,000 acre-feet per year of potable recycled water could be integrated into the system. The DHS will still need to approve of the concept of using a surface reservoir for blending recycled water before any future project can be undertaken.

The major concerns for recharging recycled water into the groundwater aquifer or for use at a conventional water treatment plant are:

- health effects considerations and the possibility of degrading groundwater basins
- public acceptance
- existing system limitations to recharge and additional sources of water
- future water quality standards that could be more restrictive
- high project costs

Studies will be conducted to examine and answer these questions.

C. Bay Area/San Joaquin Valley Water Recycling Export Project

In January 1994, the Board executed an agreement along with other water and wastewater agencies throughout the Bay Area to study the feasibility of exporting local recycled water from the Bay Area to the San Joaquin Valley. The Central California Regional Water Recycling Project (previously known as the "Bay Area/San Joaquin Valley Water Reuse Project") is cofunded by the U.S. Bureau of Reclamation and the Bay Area water and wastewater agencies. The District's share of this $2 million study is $134,100. The District serves as a member of the project's executive management committee and on various technical committees. The District, along with other agencies, is also providing "in kind" services as part of the core project team. The project originally focused on exporting the recycled water to the federal Delta-Mendota Canal service area. However, following a four-month scoping/screening phase involving public outreach, an assessment of local reuse, and an assessment of potential markets, five regional water recycling alternatives and a "no project" alternative were developed. The feasibility study was expanded to include the following alternative market areas:

1. Central Valley Project Delta-Mendota Canal Service Area
2. Sacramento-San Joaquin Delta Service Area
3. Monterey Bay Area
4. Southern San Joaquin Valley
5. San Francisco Bay Area Indirect Potable Reuse

The Draft Administrative Feasibility Report has been completed, and is being reviewed by the Project Executive Committee.

VIII. Water Conservation

The Santa Clara Valley Water District began its current water conservation program in response to becoming a signatory to the Memorandum of Understanding Regarding Urban Water Conservation (MOU), in December 1991. As a signatory, the District has been required to implement a series of sixteen Best Management Practices (BMPs). These BMPs include the implementation of a variety of water conservation programs for residential, commercial, industrial, and institutional end-users. Programs that the District currently offers as part of its MOU commitment include:

1. Plumbing Retrofit Program
2. *Irrigation Technical Assistance Program*
3. Commercial/Industrial/Institutional Audit Program
4. Public Information and Education Program
5. Schools Education Program
6. Residential Landscape Program
7. Ultra-Low Flow Toilet Rebate Program

The District also supports the activities of its retail water suppliers, several of whom are signatories to the MOU. Programs which the District supports include:

1. Residential Water Audit Programs
2. Distribution System Water Audits
3. Commercial/Industrial Water Use Review

Other factors have also helped to shape the District's water conservation activities, including the passage of the Central Valley Project Improvement Act (CVPIA) in 1994. The CVPIA included requirements for the establishment of water conservation criteria. These criteria now apply to all Central Valley Project customers, including the District. In addition to the urban activities called for in the MOU, the District is now required to implement a series of Agricultural water management practices as well. Programs the District is now required to offer include:

1. Mobile Irrigation Lab Program
2. Low-Interest Loan Program for Irrigation Efficiency Improvements
3. Pump-Test Efficiency Program
4. California Irrigation Management Information System (CIMIS) Program

In addition to programs required by MOU or Federal Mandate, the District is continuously seeking additional water conservation opportunities. Current activities include operation of a Horizontal-Axis Washing Machine Rebate Program in co-sponsorship with Pacific Gas & Electric Company.

It is anticipated that full implementation of the current group of programs will result in a demand reduction of 46,700 acre-feet per year by the year 2020 as shown in Figure 14. Studies are currently underway to identify any additional water conservation opportunities. Future programs may include support for residential graywater systems, advanced pricing strategies, financial incentives for landscape irrigation retrofits, and water efficient appliance incentive programs.

Figure 14

		1992	1999	2002	2020
BEST MANAGEMENT PRACTICES					
Retrofits:	Plumbing	1,100	2,300	2,500	2,500
	ULFT		9,900	14,500	14,500
Audits:	Residential	100	1,500	2,300	300
	Large Landscape	0	1,200	1,500	0
Landscape Con:	Public	0	2,100	4,000	6,500
	Residential	0	3,000	5,000	5,000
C/I Conservation		0	1,600	2,500	0
	Total BMP Reductions (af/yr)	**1,600**	**21,600**	**32,300**	**28,800**
POTENTIAL BMPs					
Appliance Efficiency Standards		0	0	1,200	5,200
	Total Potential BMP Reduction (af/yr)	**0**	**0**	**1,200**	**5,200**
ADDITIONAL BMP SAVINGS					
Large Landscape Audits		0	0	0	300
C/I Conservation		0	0	0	3,000
Res. Landscape (new construction)		0	0	1,600	6,800
Conservation Retrofit		0	0	0	1,600
	Total Additional BMP Reductions (af/yr)	**0**	**0**	**1,600**	**11,700**
AGRICULTURAL CONSERVATION					
Mobile Lab		0	100	250	400
Low-Interest Loans		0	200	400	600
	Total Ag Reductions (af/yr)	**0**	**300**	**650**	**1,000**
	TOTAL PROJECTED REDUCTIONS	**1,600**	**21,900**	**35,750**	**46,700**

The District is also considering development of research facilities to test and evaluate water efficient irrigation technologies and plant materials. This project would be developed in conjunction with Saratoga Horticultural Research Foundation.

The District's CUWCC Wholesale Water Agency Annual Report for 1994-95 is included in Appendix F.

Appendix A
Legislation

CALIFORNIA
URBAN WATER MANAGEMENT PLANNING ACT

Established: AB 797, Klehs, 1983

Amended: AB 2661, Klehs. 1990
AB 11X, Filante, 1991
AB 1869, Speier, 1991
AB 892, Frazee, 1993
SB 1017, McCorquodale, 1994
AB 2853, Cortese, 1994

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. The Legislature finds and declares as follows:

(a) The waters of the state are a limited and renewable resource subject to ever increasing demands.

(b) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The conservation and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Conservation" means those measures that limit the amount of water used only to that which is reasonably necessary for the beneficial use to be served.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate reasonable and practical efficient uses and reclamation and conservation activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition. a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district. or other public entity.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 7 (commencing with Section 4010) of Part 1 of Division 5 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS

Article 1. General Provisions

10620. (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640) .

(b) Every person that becomes an urban water supplier after December 31, 1984, shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its urban water shortage contingency plan with other urban water suppliers and public agencies in the area, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

10621. (a) Each urban water supplier shall periodically update its plan at least once every five years. After the review, it shall make any amendments or changes to its plan which are indicated by the review.

(b) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Include an estimate of past, current, and projected potable and recycled water use and, to the extent records are available, segregate those uses between residential, industrial, commercial, and governmental uses.

(b) (1) Identify conservation and reclamation measures currently adopted and being practiced.

(2) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports for the purposes of identifying conservation measures as required by paragraph (1).

(c) Describe alternative conservation measures, including, but not limited to, consumer education, metering, water saving fixtures and appliances, pool covers, lawn and garden irrigation techniques, and low water use landscaping, that would improve the efficiency of water use with an evaluation of their costs and their environmental and other significant impacts.

(d) Provide a schedule of implementation for proposed actions as indicated by the plan.

(e) Provide an urban water shortage contingency plan that includes all of the following elements that are within the authority of the urban water supplier:

(1) Past, current, and projected water use and, to the extent records are available, a breakdown of those uses on the basis of single-family residential, multifamily residential, commercial, industrial, governmental, and agricultural use.

(2) An estimate of the minimum water supply available at the end of 12, 24, and 36 months, assuming the worst case water supply shortages.

(3) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.

(4) Mandatory provisions to reduce water use that include prohibitions against specific wasteful practices, such as gutter flooding.

(5) Consumption limits in the most restrictive stages. Each urban water supplier may use any type of consumption limit in its water shortage contingency plan that would reduce water use and is appropriate for its area. Examples of consumption limits that may be used include, but are not limited to, percentage reductions in water allotments, per capita allocations, an increasing block rate schedule for high usage of water with incentives for conservation, or restrictions on specific uses.

(6) Penalties or charges for excessive use.

(7) An analysis of the impacts of the plan on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(8) A draft water shortage contingency resolution or ordinance to carry out the urban water shortage contingency plan.

(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency plan.

(f) Describe the frequency and magnitude of supply deficiencies, based on available historic data and future projected conditions comparing water supply and demand, including a description of deficiencies in time of drought and emergency and the ability to meet deficiencies.

(g) To the extent feasible, describe the method which will be used to evaluate the effectiveness of each conservation measure implemented under the plan.

(h) Describe the steps which would be necessary to implement any proposed actions in the plan.

(i) Describe findings, actions, and planning relating to all of the following:

(1) The use of internal and external water audits for single-family residential, multifamily residential, institutional, commercial, industrial, and governmental customers, and the use of incentive programs to encourage customer audits and program participation.

(2) The use of distribution system water audits.

(3) Leak detection and repair.

(4) The use of large landscape water audits.

(j) Describe actions and planning to eliminate the use of once-through cooling systems, nonrecirculating water systems, and nonrecycling decorative water fountains, and to encourage the recirculation of water if proper public health and safety standards are maintained.

(k) Describe actions and plans to enforce conservation measures.

(l) To the extent feasible, describe the amount of water saved through water conservation measures employed by user groups.

(m) Describe actions and planning to ensure the involvement of community members within the service area with regard to water management planning.

10632. (a) In addition to the elements required pursuant to Section 10631, a plan projecting a future use which indicates a need for expanded or additional water supplies shall be adopted in accordance with this chapter and shall include an evaluation of the following alternatives:

(1) Recycled water. The plan's evaluation of this alternative shall provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier and shall include all of the following information:

(A) A description of the waste water collection and treatment systems in the supplier's service area, including a quantification of the amount of waste water collected and treated and the methods of waste water disposal.

(B) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(C) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(D) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.

(E) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water where fresh water is not necessary, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(F) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems and to promote recirculating uses.

(2) Exchanges or transfer of water on a short-term or long-term basis.

(3) Management of water system pressures and peak demands.

(4) Issues relevant to meter retrofitting for all uses.

(5) Incentives to alter water use practices, including fixture and appliance retrofit programs.

(6) Public information and educational programs to promote wise use and eliminate waste.

(7) Changes in pricing, rate structures, and regulations.

(b) The preparation of the plan shall be coordinated with local water, waste water, and planning agencies.

10633. The plan shall contain an evaluation of the alternative water management practices identified in Sections 10631 and 10632, taking into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

Evaluation of the elements in Section 10632 shall include a comparison of the estimated cost of alternative water management practices with the incremental costs of expanded or additional water supplies, and in the course of the evaluation first consideration shall be given to water management practices, or combination of practices, which offer lower incremental costs than expanded or additional water supplies, considering all the preceding evaluation factors.

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. (a) An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water conservation and management methods and techniques.

(b) In order to assist urban water suppliers in obtaining needed expertise as provided for in subdivision (a), the department, upon request of an urban water supplier, shall provide the supplier with a list of persons or agencies having expertise or experience in the development of water management plans.

10642. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. An urban water supplier shall file with the department a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be filed with the department within 30 days after adoption.

Plans filed under this section shall describe the basis for the decision of the urban water supplier to add, change, or retain conservation measures.

The department shall annually prepare and submit to the Legislature a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall highlight the outstanding elements of individual plans. The department shall provide a copy of the report to each urban water supplier which has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part, or within 18 months after commencement of urban water service by a supplier commencing that service after January 1, 1984.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of subdivision (e) of Section 10631. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing subdivision (e) of Section 10631, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board in obtaining that information. The requirements of this part shall be satisfied by any water conservation plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing water management or conservation plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not submit an amendment to its urban water management plan pursuant to subdivision (a) of Section 10621 to the department by January 31, 1992, is ineligible to receive drought assistance from the state until the urban water management plan is submitted pursuant to Article 3 (commencing with Section 10640) of Chapter 3.

SEC. 2. No appropriation is made and no reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution or Section 2231 or 2234 of the Revenue and Taxation Code because the local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act.

Appendix B
District Contact People

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Appendix C
Model Water Use Prohibitions and Restrictions

1. Water waste, including but not limited to, flooding or runoff on sidewalks, streets, or gutters.
2. Cleaning of sidewalks, driveways, patios, parking lots, or other paved or hard-surfaced areas.
3. Use of water though a hose for washing cars, buses, boats, trailers, or other vehicles without a positive automatic shutdown valve on the outlet at the end of the hose.
4. Operation of decorative fountains.
5. Use of water for construction purposes, such as consolidation of backfill, unless on other source of water or other method can be used.
6. Water waste cue to broken of defective plumbing, sprinkler, watering, or irrigation systems.
7. Outside landscape irrigation during daylight hours.
8. Restaurant water service unless upon request.

Appendix D
List of Water Use Prohibitions Adopted in Santa Clara County

SUMMARY: POTABLE WATER USES PROHIBITED AND RESTRICTED CITIES/COUNTY/RETAILERS

	PROHIBITIONS AND RESTRICTIONS	1 Camp.	2 Sarat.	3 Mo.S	4 Lo.G	5 L.Al	6 LA.H	7 Cuper	8 Mt.Vw.	9 Pa.Al	10 Milpit.	11 Sunny	12 San Jose	13 Gilroy	14 Mo.Hill	15 Sa.Cl	16 SCCo.	17 SJW.	18 Cal.Wat.	19 Gr.Oak	20 Par.Hill
* 1	DEFECTIVE PLUMBING.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
* 2	GUTTER FLOODING	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
* 3	VEHICLE WASHING UNLESS SHUT-OFF VALVE/RECYCLED/RECLAIMED	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
* 4	CLEANING SIDEWALKS, BUILDINGS, HARD SURFACED AREA UNLESS EQUIPPED WITH AUTO SHUT-OFF VALVE OR FOR HEALTH REASONS.	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
5	WASHING EXTERIOR OF DWELLINGS, BUILDINGS, STRUCTURES, EXCEPT FOR WINDOW CLEANING OR FOR PAINTING STRUCTURES.									X	X	X	X	X							
* 6	DECORATIVE FOUNTAINS EXCEPT FOR MAINTENANCE PURPOSES.	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
* 7	CONSTRUCTION PURPOSES UNLESS NO OTHER METHOD OR SOURCE ie. RECLAIMED OR RECYCLED WATER AVAILABLE.	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
8	WATER SERVICE CONNECTIONS RE. NEW CONSTRUCTION UNLESS WATER SAVING DEVICES USED IN INTERIOR PLUMBING.										X										
* 9	RESTAURANT WATER SERVICE UNLESS UPON REQUEST.	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	
10	POSTING OF NOTICE OF DROUGHT CONDITIONS IN HOTELS, MOTELS RESTAURANTS, RESTROOMS.									X			X								
** 11	HYDRANT FLUSHING EXCEPT WHERE REQUIRED FOR PUBLIC HEALTH AND SAFETY.	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X	X	
** 12	NEW SINGLE-PASS COOLING SYSTEM. EXISTING SINGLE-PASS SYSTEMS TO REQUIRE APPROVAL FROM REGULATORY AGENCY.	X		X				X	X		X	X			X	X	X				
13	BUILDING, GRADING OR PLUMBING PERMITS SHALL BE ISSUED FOR DRILLING, INSTALLATION,CONNECTION,OR OPERATION OF A NEW WATER WELL OR THE REACTIVATION OF A INACTIVE WELL.		X																		
** 14	POTABLE GROUNDWATER EXTRACTED FROM PRIVATE WELLS FOR DUST CONTROL, CONSOLIDATION OF BACKFILL OR IRRIG. OF LANDSCAPING.							X				X			X	X					
15	USE IN EXCESS OF ALLOCATION.				X				X		X							X	X		
** 16	NEW INSTALLATION OF PLANTS, SHRUBS, TREES, LAWNS, SHALL COMPLY WITH SCVWD/CITY/COUNTY ORDINANCES, RESOLUTIONS, PERMITS, LANDSCAPE POLICIES AND GUIDELINES.		X						X	X	X	X		X	X	X					
* 17	LANDSCAPE WATERING HRS./PACIFIC DAYLIGHT/ STANDARD TIME.	X	X	X				X	X	X		X	X	X	X	X	X				
** 18	GOLF COURSE WATERING LIMITED TO TEES, GREENS,LANDING AREAS.											X			X	X				X	
** 19	OPERATING SPRINKLER SYSTEMS FOR LANDSCAPING FROM DEC TO MARCH WHEN RAINFALL APPROACHES NORMAL LEVELS.														X						
20	USE OF NON-DROUGHT TOLERANT PLANTS FOR LANDSCAPING.						X		X		X	X		X							
** 21	DRAIN,REFILL SWIMMING POOL EXCEPT HEALTH/SAFETY/TOPPING OFF.							X	X		X	X		X	X	X					X
22	CONSTRUCTION OF NEW SWIMMING POOLS,PONDS,LAGOONS, UNLESS WATER USED IS OUTSIDE THE DROT.AREA OR HEALTH/SAFETY/MAINT.									X	X					X					
23	NON-POTABLE, RECLAIMED WATER NOT IN COMPLIANCE WITH FEDERAL, STATE OR CITY REGULATIONS.									X		X									
** 24	LARGE WATER-USERS WILL BE REQUIRED TO PERFORM WATER AUDITS.											X		X	X	X					
25	GENERAL WATER WASTE, USE WATER SAVING METHODS WHEN POSSIBLE.						X														
26	USE OF WATER FOR MORE THAN FOR MIN.LNDSCPE. RE.NEW CONSTR.								X									X	X	X	
27	NO NEW LANDSCAPING OF PUBLIC FACILITIES THROUGH 1992.										X		X								X
28	USE OF WATER FROM ANY UNMETERED SOURCE, SUCH AS FIRE HYDRANTS OR OTHER DISTRICT FACILITIES																				X

* PROHIBITIONS RECOMMENDED/ADOPTED BY SCVWD & WATER RETAILERS ON 3/22/89

** RECOMMENDED ADDITIONAL POTABLE WATER USE PROHIBITIONS FOR 1991 ADOPTED BY SCVWD ON APRIL 2, 1991

June 26, 1991
TIME: 3:30 p.m.

Appendix E
Draft Water Shortage Contingency Resolution

DRAFT

RESOLUTION NO.

ADOPTING AND AUTHORIZING THE FILING AND IMPLEMENTATION OF THE SANTA CLARA VALLEY WATER DISTRICT WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, the California Legislature amended Water Code Sections 10620, 10621, 10631 and 10652, and added to Section 10656 during the First Extraordinary Session of 1991-1992 such that each urban water supplier shall, not latter than January 31, 1992, prepare, adopt, and submit to the California Department of Water Resources an amendment to its urban water management plan, the primary objetive of which is to plan for water supply shortages;and

WHEREAS, the Santa Clara Valley Water District did prepare and file an Urban Water Management Plan with the California Department of Water Resources in December of 1990;and

WHEREAS, the Santa Clara Valley Water District indirectly provides water to over 1,000,000 people in Santa Clara County; and

WHEREAS, there have now been five consecutive years of drought; and

WHEREAS, local water storage reserves within the Santa Clara Valley Water District have been severely depleted by the drought; and

WHEREAS, the Santa Clara Valley Water District has prepared and circulated for public review an updated Draft Water Shortage Contingency Plan; and

WHEREAS, a duly noticed public hearing regarding said Draft Plan was held by the District Board of Directors on January 21, 1992;

NOW, THEREFORE BE IT RESOLVED by the Santa Clara Valley Water District Board of Directors as follows:

1. The Water Shortage Contingency Plan be finalized as directed, adopted and ordered filed with the Clerk of the Board;

2. The General Manager is hereby authorized and directed to file the final Plan with the California Department of Water Resources by January 31, 1992 in accordance with the Act as amended;

Adopting and Authorizing the Filing and Implementation of the Santa Clara Valley Water District Water Shortage Contingency Plan.

Appendix F
The District's California Urban Water Conservation Council Wholesale Water Agency Report

CALIFORNIA URBAN WATER CONSERVATION COUNCIL
BEST MANAGEMENT PRACTICES
WHOLESALE WATER AGENCY ANNUAL REPORT

REPORT PERIOD JULY 1, 1994 TO JUNE 30, 1995
SUBMITTAL DATE: OCTOBER 31, 1995

RETURN COMPLETED REPORT TO:

DUE: OCTOBER 31, 1995	DUE: JANUARY15, 1996 As a portion of Annual Conservation Update	DUE: DECEMBER 31, 1995 As a portion of the Urban Water Management Plan
CUWCC 455 CAPITOL MALL, SUITE 705 SACRAMENTO, CA 95814-4408	US BUREAU OF RECLAMATION 2800 COTTAGE WAY MP- 402 SACRAMENTO, CA 95825	CA DEPT OF WATER RESOURCES P.O. Box 94236 SACRAMENTO, CA 94236-0001

AGENCY AND SERVICE AREA INFORMATION

AGENCY NAME Santa Clara Valley Water District

ADDRESS 5750 Alamaden Expressway

CITY, STATE ZIP San Jose, Ca 95118

NAME OF CONSERVATION COORDINATOR Scott Akin

PHONE (408) 265-2607 extension 2391 FAX (408) 266-0271 E-MAIL ADDRESS H20Conserv@AOL.com

NAME OF PERSON PREPARING THIS REPORT Scott Akin

PHONE same as above FAX same as above E-MAIL ADDRESS same as above

YEAR AGENCY SIGNED THE MOU 1991 DATE OF THIS REPORT 10/95

DOES THIS WHOLESALE AGENCY ALSO SELL DIRECTLY TO END USER? YES ____ NO x

IF "YES", HAS THIS AGENCY COMPLETED RETAIL AGENCY ANNUAL REPORT? YES ____ NO____

THIS AGENCY IS A: MUNICIPALITY ________ SPECIAL DISTRICT: x INVESTOR OWNED ________

UTILITY SERVICES PROVIDED BY THIS AGENCY INCLUDE:

SEWER ____ ELECTRICITY ____ GAS ____ WATER x RECLAIMED WATER____ OTHER Flood Control

TOTAL EXPENDITURES AND PROPOSED BUDGET			
WATER UTILITY	PRIOR YEAR	REPORT YEAR	FOLLOWING YEAR
OPERATIONS & MAINTENANCE	$63,689,000	$70,474,000	$72,435,000
CAPITAL	$18,740,000	$20,897,000	$21,030,000
TOTAL	$82,429,000	$91,371,000	$93,465,000
CONSERVATION	$ 2,297,000	$ 2,285,000	$ 2,930,000

CUWCC -WHOLESALE WATER AGENCY ANNUAL REPORT -1994-95

PLEASE CHECK THE APPROPRIATE BOXES INDICATING EFFORTS WHOLESALE AGENCY HAS MADE TO IMPLEMENT THE BMPs DURING THIS REPORT YEAR. INDICATE WHETHER THE PROGRAM IS A PILOT WITH THE LETTER "P" IN THE "PROGRAMS" CATEGORY. A CHECK WILL INDICATE THAT THE PROGRAM IS ONGOING.

IMPLEMENTATION OR SUPPORT OF BMPs 1993/94

REPORTING AGENCY	PROVIDES						
SANTA CLARA VALLEY WATER DISTRICT							
BEST MANAGEMENT PRACTICES	PROGRAMS	MATERIALS	MONETARY SUPPORT	OTHER	EXEMPT*	EXPENDITURES	NUMBER COMPLETED
1. Interior and Exterior Audits	X	X				$0	1,744
2. Plumbing Retrofit	X	X				$130,000	8,785
3. System Water Audits				X		$0	N/A
4. Metering and Commodity Rates				X		$0	
5. Landscape Water Audits	X					$22,500	49
6. Non-Residential Landscape				X		$0	N/A
7. Public Information	X	X				$100,000	30,000
8. School Education	X	X				$322,393	N/A
9. Commercial and Industrial Audits				X		$75,000	55
10. New Commercial/Industrial Audits				X		$0	N/A
11. Conservation Pricing - Water				X		$0	
12. Residential Landscape	X	X				$68,000	N/A
13. Water Waste Prohibition				X		$0	
14. Conservation Coordinator			X			$67,500	
15. Financial Incentives	X					$0	N/A
16. Toilet Replacement	X		X			$ 1,875,000	16,199

CUWCC -WHOLESALE WATER AGENCY ANNUAL REPORT -1994-95

PLEASE LIST RETAIL AGENCIES THAT PURCHASE WATER FROM THIS AGENCY

REPORTING AGENCY **Santa Clara Valley Water District**

WATER PURCHASERS

SIGNED MOU √*	NAME OF AGENCY	RETAILER or WHOLESALER	ACRE FEET SUPPLIED DURING REPORT YEAR
X	California Water Service Company	Retailer	10,451.00 AF
W	Cupertino Municipal Water Utility	Retailer	5,723.82 AF
W	City of Gilroy	Retailer	5,733.57 AF
W	Great Oaks Water Company	Retailer	10,556.00 AF
W	City of Milpitas	Retailer	4,461.57 AF
W	City of Morgan Hill	Retailer	5,213.00 AF
X	City of Mountain View	Retailer	10,964.89 AF
X	San Jose Municipal Water System	Retailer	11,058.16 AF
X	San Jose Water Company	Retailer	122,087.16 AF
W	Santa Clara Water & Sewer Utilities	Retailer	4,351.00 AF
W	City of Sunnyvale	Retailer	9,901.00 AF
			AF
			AF
			AF
			AF
			AF
			AF
			AF
			AF
			AF
			AF
			AF
			AF
		TOTAL	200,501.17 AF

*If wholesaler signed for agency listed, please indicate with a "w".

CUWCC -WHOLESALE WATER AGENCY ANNUAL REPORT -1994-95

REPORTING AGENCY	Santa Clara Valley Water District

WATER REUSE SURVEY

HAS THIS WHOLESALE AGENCY PREPARED A FEASIBILITY STUDY ON WATER RECLAMATION?

YES _X_ NO____

YEAR STUDY COMPLETED _1992____

ANNUAL RECLAMATION SUMMARY	
CURRENT AMOUNT OF WATER REUSE	AF
TOTAL POTENTIAL USES IDENTIFIED	36,710 AF
PROJECTED REUSE OF RECYCLED WATER, 2000	-------- AF
PROJECTED REUSE OF RECYCLED WATER 2010	36,170 AF

If no reuse is planned, please explain why on a separate sheet.

EXEMPTION

IF YOU ARE EXEMPTING YOUR WHOLESALE AGENCY FROM ANY BMP, PLEASE ATTACH A COST BENEFIT ANALYSIS AS REQUIRED BY THE MOU.

CUWCC WHOLESALE WATER AGENCY ANNUAL REPORT - 1994-95

Attachment 1

Agency: Santa Clara Valley Water District

Implementation or Support of BMP 3: OTHER

Monthly distribution system checks are performed on all District owned distribution systems. Retail agencies independently audit their distribution systems. Frequency of audits varies by agencies. System wide losses for FY 94-95 is less than 1%. County-wide, unaccounted water is less than 6% of total use.

Appendix G
Public Comments and Responses from the District

Urban Water Management Plan Public Comments

TO: Santa Clara Valley Water District
FR: Silicon Valley Toxics Coalition
RE: High Tech Water Use Reduction and Promotion of Recycling Efforts

Silicon Valley Toxics Coalition is a community-based non-profit organization working to reduce toxics in our environment, workplace, and communities through the promotion of the democratic process. We are dedicated to working with local, state, national, and international agencies, organizations, and residents toward developing sustainable policies and practices. To this end, we support the efforts of the Santa Clara Valley Water District to develop a long-term plan for the Santa Clara County area, and in doing so, we contribute the following comments on the Urban Water Management Plan:

- The following comments specifically address the issue of reliability of supply to meet existing and future demands of Santa Clara County businesses and residents. The two areas we focus on are: 1) *Use Reduction by the Electronics Sector*; and 2) *Promotion of Recycling over the construction of a new reservoir (Los Banos-Grande Reservoir).*

Use Reduction by the Electronics Sector

- WHEREAS, 9% of the 111,000,000 gallons of water used in Santa Clara County in 94/95 were used by the industrial sector, and WHEREAS our research has shown that approximately 65% of the top industrial dischargers were electronics companies, CONSEQUENTLY, approximately 6 5 billion gallons, or almost 20,000 acre feet, is consumed yearly by the electronics sector.

- A source has stated that Intel of Santa Clara County used 1.1 billion gallons of water in 92/93 alone, while National Semiconductor used 1.2 billion gallons of water this same year. This is equivalent to 18,433 average households in the San Jose Municipal Water System service area, or the equivalent to all the residents of Milpitas combined.

- According to the three POTW's in the area, the top 9 water dischargers in the county, discharged 1.4 billion gallons of water, or the equivalent of 25,000 residents (2/3 of all the residents of Gilroy combined$_1$).

Water Conservation Ideas for Electronics Sector

- According to a report by SEMATECH, the electronics sector can reduce water usage in cleaning by 40%. Cleaning, or rinsing, accounts for 40% of all water usage in an electronics manufacturing facility. This could result in a 16% reduction in overall water use, which if applied locally at the National Semiconductor and Intel facilities would save over 360 million gallons per year, or 1,100 acre feet, at just these two facilities.

- According to officials at the Intel, New Mexico plant, they can reduce overall water use by 39%. Through increased efficiency in the water baths, they were able to save 122 million gallons per year through very simple changes which increased efficiency in a specific process. A change in equipment allowed them to save another 20 million gallons per year.
- Stronger incentives, as well as a conservation based rate structure similar to the one developed for the residential sector in the San Jose Municipal Water System service area, would be enough motivation for the electronics sector to reduce use by as much as 20% or more.
- If the electronics sector uses close to 7.5 billion gallons of water per year in Santa Clara County, and if this sector could reduce use by 20%, the demand for the county as a whole would be reduced by 1.5 billion gallons, or 4,600 acre feet, per year. In comparison, the two largest water savings programs in Santa Clara County (Single family Residential Retrofits and ULFT Retrofits) combined will save 6,700 acre feet per year when completed. All three efforts combined could save almost 3.7 billion gallons per year, or reduce county-wide water demand by 3.4%. If population is expected to grow by 11% by the year in the next 15 years, this would go far to reduce much of the pressure.

Promotion of recycling over new reservoir construction

- The construction of another reservoir should be considered only as a *last* resort. In fact, in our investigations at SVTC we have found no evidence that such a reservoir is necessary to meet existing or future demands. While the population is expected to increase by 11% over the next 15 years, conservation efforts among industry (electronics) and continuation of the various conservation programs initiated by the SCVWD and the San Jose Environmental Services Department, could conserve enough water to meet at least one half of this increase in demand.
- Another 13 % of demand could be met through existing recycling efforts at the three waste water treatment plants: 30,000 acre feet per year at the San Jose and Sunnyvale plants; 15,000 acre feet year at the South County Regional waste water treatment plant.
- The conservation efforts, combined with the supply of reclaimed water available for irrigation, adds up to an increase of at least 17% in supply, enough to meet current estimates of population growth.
- WHEREAS the CVP and the SWP have been unable to deliver full entitlements, and WHEREAS the Delta has reached its limit for providing additional water to other regions without significantly increasing the risk of saltwater intrusion which could

endanger the Winter Run Chinook Salmon and the Delta Smelt, and WHEREAS the Bay Delta Process is increasingly complicated politically and will not likely result in new sources of water for any region, and WHEREAS according to a special report entitled "*The Bay Delta Process: A Roadmap*" published by the California Environmental Insider, "*According to some water experts, Southern California users have progressed much further in their conservation efforts than their northern neighbors and the latter may suffer if the Board actively looks at conservation efforts in making its decision* [to adjudicate the rights of all water rights holders]" and "*Urban and agricultural users face reduced water supplies; especially given projected population growth in the state*", THEREFORE Silicon Valley Toxics Coalition takes the position that the Santa Clara Valley Water District should financially support the use of reclaimed water coming from the POTW's to the extant that the per acre foot price is competitive with the water sold by the water retail agencies. The tax payers should not be responsible for paying 66% of the costs, while the SCVWD only pays 8% of the cost for the development of the new recycling project at the San Jose/Santa Clara POTW.

The comments from the Silicon Valley Toxics Coalition raised two main issues:

Water Use Reduction by the Electronics Sector

The Santa Clara Valley Water District and its retail water suppliers have developed a comprehensive Water Conservation Program that provides financial and technical assistance to all classes of water users, including large manufacturing facilities. Many facilities in this sector have already implemented a variety of water use efficiency improvements. Common among many hi-tech facilities is the use of recycling within the manufacturing process. Several case studies have been prepared over the years to demonstrate the effectiveness of this measure and its application in this sector.

A wide range of financial and technical resources are available to non-residential water users within the county, to aid them in identifying and achieving improved water use efficiency. These include financial incentives, on-site technical support, special workshops and seminars, and educational material. Large manufacturing sites such as Intel and National Semi-conductor are considered key targets for the commercial/industrial audit program, scheduled to begin in Spring 1996, and for the financial incentives offered by the City of San Jose.

An additional tool in encouraging water use efficiency is pricing incentives. Since water rates represent a very small fraction of the total resource costs to most hi-tech manufacturing facilities (being dwarfed by energy, wastewater, and water treatment costs), constructing special water rate structures is not considered an effective means of reducing water use. However, all non-PUC regulated retail water suppliers within the county do employ tiered water rates.

The District intends to continue to support water efficiency improvements in large manufacturing facilities and anticipates that these actions will result in water use reductions approaching 3000 acre-feet per year by 2020. We anticipate that these actions and others will ultimately reduce water demands by 45,000 acre-feet by 2020.

Promotion of Recycling over the Construction of a New Reservoir

Current estimates for the expected recycled water usage are approximately 14,000 acre-feet for the San Jose and Sunnyvale wastewater treatment plants. This reflects the City of San Jose's current option that will provide marsh enhancement and not extend their non-potable project at an estimated cost of $350 million. The South County Regional wastewater treatment plant can produce a maximum of 10,000 acre feet per year at build-out if the South County plant were to develop its full plant capacity. This quantity is significantly less than the 45,000 acre-feet per year cited in the Silicon Valley Toxics Coalition comment.

To the extent that the use of recycled water offsets the need for additional potable supplies, the District saves money by not having to develop or purchase additional water. The District's economic participation in recycled water projects is based upon this marginal cost to the District. The District cannot support recycled water to the point where the per acre foot price to the customer is competitive with the potable water from the retailers. This would require recycled water be subsidized by District ratepayers, beyond the level to which the community is benefited by the recycled water project. This is not compatible with the District's water management concept that the user pays for benefits received. It would not be economic for the District to transfer funds to recycled water users in an amount exceeding the cost savings to the District customers.

The county's existing supplies are anticipated to meet the County's long-term water needs in years with average rainfall, even with projected employment and population growth. However, shortages of up to 100 thousand acre feet of water may occur in future droughts. Additional regulatory or environmental requirements, which are often difficult to anticipate, also threaten the ability of the District to meet its customers' water needs in the future.

In recognition of a changing operating environment and the need for long-term planning, in 1994 the Board identified water supply reliability as the top priority issue for the District. The District has begun the process of developing an Integrated Water Resources Plan (IWRP) to be used as a guide in meeting its water supply needs to the year 2020. This work will address supply-side options (water transfers, water recycling, and storage) and demand-side management options. During 1995 this process was discussed in several meeting with our Board of Directors to get their concurrence. The IWRP process continues in 1996 through an open and participatory process. The IWRP will be developed to balance the many competing objectives such as supply reliability, cost, water quality, and the environment while recognizing the many uncertainties inherent in planning. In this process the desirability of all alternatives, and the District's role in each alternative, will be assessed.